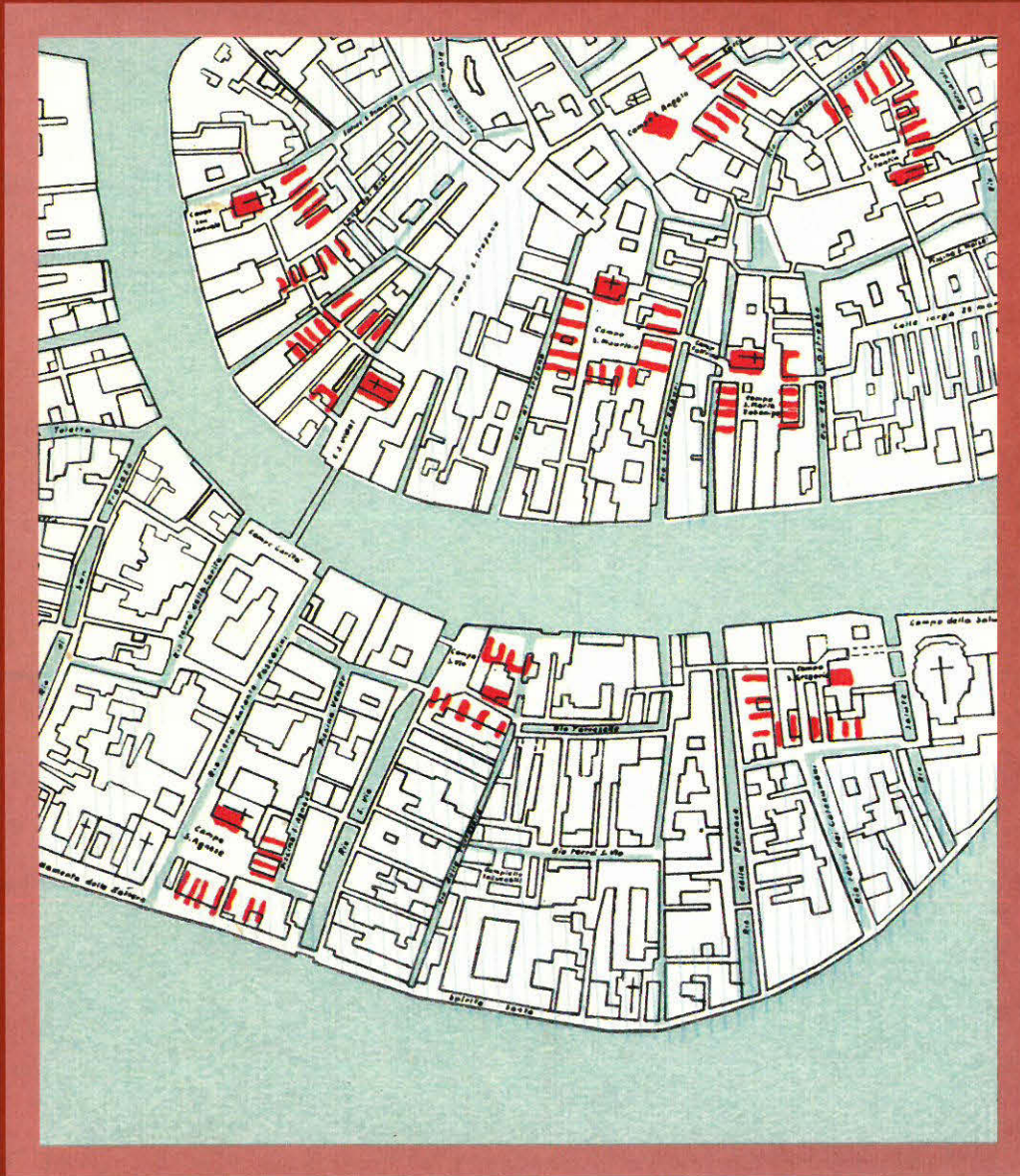


# TYOLOGICAL PROCESS AND DESIGN THEORY

EDITED BY ATTILIO PETRUCCIOLI



AKPIA



## THEORY AND METHOD IN ISLAMIC ARCHITECTURAL DESIGN

Much of the confusion and disorientation in the contemporary architecture is caused by the failure of finding an alternative to a market-oriented individualism, fashionable nihilism or picture-book historicism.

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*On the cover: Plan of Venice with the original settlements up to the XIth century.*  
(From Saverio Muratori, *Per una operante storia urbana di Venezia*, Roma, 1959)Plan



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**ATTILIO PETRUCCIOLI**

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*Attilio Petruccioli*

# **Exoteric, Polytheistic Fundamentalist Typology**

Gleanings in the Form of an Introduction

Four words written on the back side of the conference program — exoteric, polytheistic, Fundamentalist typology — briefly sum up a virulent debate. The record of the discussion during the conference on “Typological Process and Design Theory” has many lacunae, and it is impossible to attribute these four words to any particular author or exchange. They remain like the ruins of an ancient building whose original use and purpose we do not know, but which in this case testify to the confusion in the field of typological studies. For the architect has a conflicting relationship with typology— and by typology I mean the science of studying types — one that is directly proportional to the confusion in the use of the term “type” itself. In the United States the discourse on typology is periodic, and has sometimes had qualified success, but soon it is rapidly absorbed and transformed into images for the market. This is because the architect operates in a quandry between awareness that design is based on precedents and fear that this reference to precedents might become an attack on individual freedom of expression.

Some architects, myself included, believe, on the contrary, that design is a continuous, modest work of re-elaborating precedents and that teaching architecture is an undertaking in forming professionals who can provide buildings representative of the values of their society. Civil servants, like the many less-well-known architects who built Back Bay and the South End here in Boston, should be an inspiration, since these buildings are part of the chorus, and not one of the prima donnas who yell to overpower the music. I also believe that the need to take responsible decisions for our built environment, whether the historical patrimony or the new expansions of the city, requires supremacy in the craft, in the body of technical knowledge. As Victor Hugo says, “Great buildings, like great mountains, are built by the centuries.” Hugo then goes on to describe how the craft of a new art operates on the monument without shocks, like the sap in a tree that continually circulates. Thus, while the first set of architects—which is most of them— study ruptures in continuity and disruption under the pretext of representing the conflicts of our contemporary society, the second set of architects study continuity and try in various ways to establish a connection with the processes of the past.

The aim of the international conference, “Typological Process and Design Theory,” held at MIT in the spring of 1995, was to facilitate a dialogue

between these latter, often unheard, architects and theorists and the more general operators of the built environment like engineers and geographers who refer to historical processes (that is, to the typological or morphological: the difference between these terms, if there is any, is still pending). This dialogue was also open to all those who simply feel uncomfortable with the disruption of the modern suburb or the blight in the center of the cities and seek a different solution.

A first important achievement of the conference was in not dividing scholars on the basis of terminology, but in working on building a common platform — that is, an approach to the built environment as structure or system of relationships. The other important achievement was the adoption of the idea of morphogenesis or process — that is, the introduction of the concept of time in urban and architectural studies.

In the United States the notion of typology is still associated with Leon Krier and Aldo Rossi, whose ideas are based on a nostalgic view of an immutable past.<sup>1</sup> In order to demonstrate how incomplete this perception is, I will summarize here some of the most significant passages in the evolution of the concept of type. In the past the idea of type and architecture almost coincided; both were part of the same creative process, because type was a collective product shared by the architect and the people at any given time. Typological studies were born in the eighteenth-century French Enlightenment to counter the break in the historical continuity and the separation in the building process between the designer and the client. The Enlightenment generated twin ideas that represent two sides of the problem: the functional approach and the formal approach to type as embodied respectively by two architects of the first half of the nineteenth century, Jean Nicholas Louis Durand and Etienne Louis Boullée.

Durand is famous for his manual of architectural composition, *Precis des leçons d'architecture*; it provided a simple method of teaching design to the students of the Ecole Polytechnique in Paris, which consisted of three stages: study of the architectural elements, the assembly of these elements into systems, the adaptation of a formal scheme to a designated use.<sup>2</sup> Durand then delineated specific building types: the large house, the hall of justice, the school, the library, the museum, the prison, etc.

The method was didactic and reductive, teasing the Vitruvian triad: while *venustas* is identified with healthfulness, the most pragmatic component, its vocabulary is scarcely mentioned. Not even *firmitas*, which implies the technology and science of construction, is included in the manual. Only *utilitas* is recognized for its principle of economy and convenience. History is the important gap in Durand's method; the classic forms are used only in a conformist attitude and for convenience. The design of the city and its interpretation also become an extension in scale of this systematic generative system. Durand's method has been subject to much criticism, accused of being a theory of mechanical combination.<sup>3</sup> But in my opinion, its greater weakness is that by considering the legibility of the elements to be

unimportant and by disrupting the classical vocabulary Durand opened the door to eclecticism.

The part of the modern movement intrigued with the idea of the industrial machine reflects Durand's mechanical predisposition and in the same way tended to conceive of houses, fabric, and cities as an infinite variety of combinations of components loosely woven together.<sup>4</sup> Durand is also the antecedent for contemporary experiments like Shape Grammars which revisit the principle of infinitely combining shapes with no functional, static, or formal restrictions.

Boullée, on the other hand, believed that memory had an educational value for a budding post-Revolutionary society and that historical forms could communicate the shared values of both the designer and the society—thus his emphasis on *venustas*.<sup>5</sup> All of Boullée's unbuilt projects show little interest in technology and are organized around complicated nonfunctional disposals; their only intent is that of conveying meanings and symbols through accurate manipulations of the classic forms.

In comparing the projects and the realizations of Durand with the drawings of Boullée, however, it can easily be demonstrated that the separation between the two is not so drastic. Durand's manual was targeted at students and professionals who could offer broad, convenient, and economical solutions; it was not meant to be a theoretical work like that of Quatremère, which is almost conceived as an appendix to the *Encyclopedie*.

In the 1960s Giulio Carlo Argan provided the theoretical support for the idea of formal typology or morphological memory present in Boullée's work by elaborating how type is deduced a posteriori. For Argan, for instance, the central-plan temple as a type is not identifiable with any specific temple, but is a synthesis, a superimposition of all central plan temples.

The birth of a type is conditioned by the fact that a series of buildings share an obvious functional and formal analogy among themselves. In the process of comparing or selectively superimposing individual forms for the determination of the type, the identifying characteristic of specific buildings is eliminated and only the common elements remain which then appear in the whole series. Type is depicted as a scheme deduced through a process of distillation from a group of formal variants to a basic form or common scheme. Type is accepted as the introduction to the artistic element of the work and corresponds to a moment of suspension in historical criticism.<sup>6</sup>

In the twentieth century, typological research has oscillated between these two wrong attitudes—the functional and the formal approach — until in the nineteen-fifties a radical rethinking of the assumptions of the modern movement absorbed both approaches without dissolving into a compromise. Focusing on the positive revaluation of the urban fabric through different routes, three schools in Europe began to elaborate theories for the understanding of the built environment and the relation between its elements. All of them were rooted in history, but with differences in using the notion of typology. They are, in chronological order: the Urban



Morphology Research Group of the University of Birmingham inspired by M. R. G. Conzen, the Italian school established by Saverio Muratori, and the school of Versailles in France.

To the German geographer M. R. G. Conzen (and the French scholars Marcel Poete and Pierre Lavedan) goes the merit of individuating the conservative value of the urban plan. Conzen's fundamental studies concentrated on small towns of medieval origin in England in which he developed new concepts like the "fixation line" and the "fringe belt."<sup>7</sup> His analysis isolated three basic components of the urban fabric — street, plot, and building. He also introduced an evolutionary perspective into the reading of the plan, intuitively understanding that the growth of cities does not correspond to an assemblage of pieces. But Conzen did not arrive at a synthesis of the concept of polarity. His limits lay in an empirical inductive approach that prevented him from building a systematic transmissible theory.

The school of Birmingham moved its focus from small settlements to actual problems like the impact of industrial settlements on urban form and fringe belts (Slater) and suburban areas (Larkham) in order to verify Conzen's ideas in a wider context of exemplification.<sup>8</sup> Karl Kropf, the scholar most interested in theory, has recently elaborated important concepts including level of specificity and level of resolution and, following his discovery of the Italian Gianfranco Caniggia, he has extended his spectrum and the levels of scalar complexity to seven. The difference between schools is in the goal of their research. For the Italian school<sup>9</sup> the goal of typological/morphological research is to establish a correct formulation of the design process, and in fact Muratori talks of *storia operativa*—operational history. For the group of geographers at Birmingham the goal of analysis is to solve the problems of classification for the conservation of the built patrimony; it does not involve design issues at all.<sup>10</sup> Muratori's theory originated in the crisis of the Modern Movement, in the need to reformulate design and building on different basic principles. In contrast to Conzen, Muratori believes that either knowledge is systematic or it does not exist at all. His theory is deeply rooted in post-idealistic philosophy and uses a deductive method that does not accept discontinuities. The method is based on a critical reading of the existing built landscape, on a continuous maintenance of the physical realm, and on formulating a design process able to reestablish links with history and memory.

The concept of building type is the mental tool used to facilitate orientation in the intriguing stratified layers of the fabric. It is different from the formal schema of the formalists or the assembly box of the functionalists, because it is something that actually exists in reality — it is history. Another leading concept is that of "organism" (a favorite of the School of Architecture in Rome since its foundation in the twenties by Gustavo Giovannoni)<sup>11</sup> that conceives of any built complex as a living structure made out of elements hierarchically ordered, but also mutant.

Gianfranco Caniggia has continued Muratori's work on building type with

his own original contribution gleaned from his reading of the medieval fabrics of Como, Florence, and Genoa. He formulated the concepts of hierarchy of the routes (*percorsi*) and their formative roles in the evolution of the fabric (*tessuti urbani*) with particular reference to rowhouses and apartment houses.<sup>12</sup>

To establish a genealogical table we can say that Aldo Rossi and Carlo Aymonino, both in Venice in the sixties after Muratori left for Rome, even though influenced by Muratori, remained within the formalist camp. After a long career and publications in the field of typological studies, they reached the conclusion that urban analysis has little or no influence on the design process. Rossi in his *Autobiography*—casually published first in English in the United States and only later translated into Italian—never mentions the term typology.<sup>13</sup>

The French school of Versailles, whose most representative members are Jean Castex, Philippe Panerai, and Jean Depaule, is the most recent and claims its origin both from Aymonino and Rossi and from S. Muratori.<sup>14</sup> Two important general characteristics differentiate its approach to architecture, one related to the dialectic of urban form and social action, and the second related to the dialectic of modern-non modern. As distinct from the Italian method, here the social component is always first, due to the influence of the French sociologist Henri Lefebvre. In particular it is evident in the work on Cairo conducted by Depaule, where the attention to physical space is the same as that given to use, furniture, the material culture, and the etymology of the terms of dwelling.<sup>15</sup>

Even if the school of Muratori pays its respects to the research of those architects like Alexander Klein, who in Germany in the thirties dedicated his life to bettering the condition of social housing, its reservations are particularly strong when faced with the achievements of the Modern Movement, which it considered particularly disruptive to the continuity of the fabric and the city. The French, on their part, do not consider the inheritance of the Modern Movement an accident, but a patrimony on the same level as other periods. As a consequence the differences are particularly sensitive at the moment of introducing the design processes.

To conclude with the words of Anne Vernez Moudon: The three schools of typomorphology offer an intellectually challenging framework for thinking about the built landscape within the historical context of the city. . . . Debates about typomorphology in the three schools illuminate the use of type in design theory. The schools differentiate between the descriptive, analytical, explicate critical and generative types. They are therefore able to separate conceptually the description, analysis, and critique of the historical and the existing city from the projection of the future city. They can learn to know the built landscape, to explain it and to theorize about its production without worrying about its future design.<sup>16</sup>

The aim of the collected contributions in these proceedings is to introduce to the United States some nodal themes of the theories of the three European

schools and to insert them into an already existing fertile local field of studies on morphological analysis, as Anne Vernez Moudon's essay in this book demonstrates. A second aim is to open the debate on some new original contributions that go beyond the corpus of theories already established. The framework of this first conference, the first of a trilogy,<sup>17</sup> is that of creating an encounter in which the three European schools could put some ideas on the table and discuss them with their American colleagues. The proceedings do not intend to show an unified body of work, but an articulate sequence of problematic questions and tentative answers in view of the recent radical changes in the morphology of the cities and territory. Of the many stimulating themes suggested, I will mention only a few here, leaving the reader the pleasure of discovering the rest.

The central theme of Serge Santelli's article is the permanence of the concept of type — type intended as a codified building patrimony shared by a society or at least a homogeneous group. Santelli notes that the procedures for implanting a quarter and even building a house in the illegal settlements of Tunis like Melassine are not radically different from those applied to the fabric and buildings of the medina. He deduces that a certain continuity exists. The fact is that the newcomers who settle in those peripheral quarters are peasants and therefore tend to replicate rural types, while the urban groups tend towards different forms of aggregation and dwelling mutated from Western bourgeois culture (in this case the more correct term is "model" instead of "type"). It is as if the urban typological process began from an original step much less evolved. It will be interesting to monitor those settlements to see what direction the process will take in the near future. In a word, will they follow the same phases that the medina went through? or veer directly towards the apartment houses that are the leading building type now?

Continuity is the underlying concept in the papers of the Italians as well. Both Giuseppe Strappa and Giancarlo Cataldi take their starting point from some of Muratori's cues like the concept of organism and that of the apriori type. The former tries to clarify nodal concepts while the latter shows the complex and sometimes contradictory architectural activity Saverio Muratori went through in trying to apply his ideas of operational history. Both these authors raise at the end the delicate question of the relationship between typological analysis and design. It is a relationship which can be expounded through an actual project more naturally than in abstract speculation, and the two projects for the competition for the churches of Rome provide the occasion for speculating on the possibility of a method of design that does not offer space to arbitrary inventions, but routes the formal choices through a rigorous reading of the historical types and fabric.

As always happens, the project at a moment of synthesis is also at its most risky moment, since the synthetic process of design is necessarily more reductive than that of the analytical reading. The two examples have the merit of showing a possible alternative architectural approach in the use of history as an operational tool.



Karl Kropf applies the new concepts of typological analysis to zoning, which in his vision is an operational instrument, though it has only been applied in a derivative manner up to now. If the built environment is a palimpsest, it should be able to accommodate either continuity or change. In Mennecy sur l'Oise in France, where a project of urban conservation was required, the town was divided into morphologically homogeneous zones and criteria of continuity and change attributed to them. The interest of that experiment resides in the new idea of a floor plan that suggests principles flexible enough to accommodate both criteria.

Francesco Giovanetti, a specialist in building conservation (Italians use the term *recupero*, which has also the connotation of salvaging) for the Municipality of Rome has unique experience in traditional masonry structures, since he restored some blocks in the historical center of Rome. Giovanetti's approach, as shown in the impeccable tables of details of the *Manuale del recupero*, is a coherent application of the idea of critical maintenance to the conservation of the architectural heritage.

Again the fundamental principle is conservation versus disruption. It implies that a monument can be maintained more than restored through the substitution of materials that have the same nature and perform the same, as opposed to the principle of the Charter of Venice, inspired by the Charter of Athens that prescribes that every insertion should be made of different material. To use a more effective terminology, what the tables imply is a method of preservation that is non-intrusive versus so-called scientific restoration, which is surgical.

Anne Vernez Moudon focuses on the changing character of the American suburbs and provides an exhaustive panoramic synthesis of the research carried on in the problematic field of morphological studies in the United States.

The future of our cities in Europe and in the United States, will actually be played out, not around the role, more and more marginal, of the historic centers, but around the problems of the periphery and the suburbs. Personally I feel that the complaints about the ugliness of our spaces outside the structured, beautiful historical center are inconsistent. Periphery and suburbs are the product of our contemporary culture. Nevertheless, everybody agrees with Anne Vernez Moudon that this does not imply that we have to abandon these spaces to despair, but that open spaces can be designed in a more coherent way and suburbia can be more densified in order for it to provide more interactive spaces. The example of open spaces in Seattle is a clear demonstration.

Along the same lines of interest is the paper by Sylvain Malfroy that deals with the critical range of the concept of urban fabric. The role of fabric and its mutation in time are placed in relation either with contemporary problems like suburbanization, blighted areas, and peripheries, or problems of urban conservation and restoration of monuments. Malfroy asks himself if this traditional methodology has applications in the new problems raised by

the contemporary world and how methodology would be affected by these new questions. The neon boxes which line the highways, the atopic objects of our suburbia, like malls designed as introverted citadels or abandoned industrial areas, tell us where the future challenge for typological studies lies.

In conclusion, I feel that the organic city of the past, with its harmonious growth, its balanced relations between fabric, routes, and polarities is not replicable nowadays. What is possible to achieve is territory with systems of relations whose parts are in reasonably coherent equilibrium and with related spaces in between, instead of a no-man's land.

Before delivering this book to the printer I want to thank all those who have contributed to it: in addition to the authors who patiently accepted suggestions to improve their text several times to make it more accessible to a wider public, to Margaret Sevckenko who has edited this volume magisterially, and Rupinder Singh who has contributed patiently to its layout. The conference was attended by a large audience and was a great success due to the vibrant participation of my colleagues at MIT who share an interest in morphological urban studies: Stanford Anderson, chairman of the Department of Architecture, William Porter, Julian Beinart, Roy Strickland, David Friedman, John Habraken, Sibel Bozdogan, John De Monchaux, Garry Hack, and Dean William Mitchell. Invaluable too were the contributions of the distinguished scholars who acted as discussants: Stanford Anderson, Julian Beinart, Sibel Bozdogan, Maristella Casciato, Michael Dennis, Karen Franck, Marco Frascari, John Habraken, William Porter, Andre Raymond, and Donald Schon. Unfortunately we were unable to record the discussions that followed the papers which were so full of seminal ideas. Special thanks are due to Renee Caso who supervised the organization of the conference.

Cambridge, Massachusetts  
Attilio Petruccioli  
May, 1997

## Notes

<sup>1</sup> See Terrance Goode, "Typological Theory in the United States: The Consumption of Architectural Authenticity," *Journal of Architectural Education*, September 1992; and Anthony Vidler, "The Third Typology," *Oppositions* 7 (1976).

<sup>2</sup> J. N. L. Durand. *Precis des lecons d'architecture donnees a l'Ecole Royale Polytechnique* (Paris, 1819).

<sup>3</sup> For criticism of Durand for creating a dry functionalism, see L. Benevolo, *History of Modern Architecture* (Cambridge, 1977), p. 34; R. Moneo, "On Typology," *Oppositions* 13 (1978).

<sup>4</sup> An important distinction should be made between research that contributed to the development of the attributes and performance of low- cost housing, though based on the philosophy of industrial production, and similar research which degenerated into standards for an *Existenz Minimum*.

<sup>5</sup> The ceiling of the famous National Library project was actually a false ceiling and not a structural one.

<sup>6</sup> The term *tipologia* written by Argan in the *Enciclopedia Universale dell'Arte* was omitted from the American version and translated later by Joseph Rykwert. This omission speaks volumes about the resistance to typology in the American art-historical milieu in the 1960s. See also, Joseph Rykwert's "On Typology," *Architectural Design*, December 1963: 544-565.

<sup>7</sup> The bibliography of M. R. G. Conzen is immense, but the seminal articles are: "Alnwick, Northumberland: An Essay in Town-plan Analysis," *Publications of the Institute of British Geographers* 27 (1960); "The Use of Town Plans in the Study of Urban History," in H. J. Dynos, ed., *The Study of Urban history* (1968); "Morphogenesis, Morphological Regions and Secular Human Agency in the Historic Townscape as Exemplified by Ludlow," in D. Deneke and G. Shaw G., eds., *Urban historical Geography: Recent Progress in Britain and Germany* (1988), pp. 258-272.

<sup>8</sup> J. W. R. Whitehand and P.J. Larkham, eds., *Urban Landscapes: An International Perspective* (London, 1972); T. R. Slater, ed., *The Built Form of Western Cities* (Leicester: 1990); idem, "Preservation, Conservation, and Planning in Historic Towns," *Geographical Journal* 150, no. 3 (1984), pp. 322-34; J. W. R. Whitehand, "The Basis for an Historico-Geographical Theory of Urban Form," *Transactions of the Institute of British Geographers* n.s.2 (1977), pp 400-16; idem, "Conzenian Ideas: Extensions and Developments," in J. W. R. Whitehand, ed., *The Urban Landscape: Historical Development and Management: Papers by M. R. G. Conzen* (1981), pp. 127-52; idem, *Residential Development under Restraint: A Case Study in London's Rural-Urban Fringe*, Occasional Publication, School of Geography, University of Birmingham, 1990; idem, and S. M. Whitehand, "The Study of Physical Change in Town Centers: Research Procedures and Types of Changes," *Transactions of the Institute of British Geographers* 8, no. 4 (1983), pp. 483-507; idem, "The Physical Fabric of Town Centers: The Agent of Change," *Transactions of the Institute of British Geographers* 8, no. 4 (1983), pp. 483-507; idem, *The Changing Face of Cities: A Study of Development Cycles and Urban Form*, Institute of British Geographers, special publication no. 21 (Oxford: Blackwell, 1987); idem, "Recent Developments in Urban Morphology," in *Urban Historical Geography, Recent Progress in Britain and Germany*, ed. D. Denecke and G. Shaw (Cambridge, 1988), pp. 285-96.

<sup>9</sup> Karl S. Kropf, "The Definition of Built Form in Urban Morphology," Ph.D. diss., Department of Geography, University of Birmingham, 1993.

<sup>10</sup> For a complete bibliography of Saverio Muratori's works and those of his pupils, see CISPUP, *Saverio Muratori e la sua scuola. Regesto bibliografico* (Pienza: 1995). Essential for understanding Muratori's position on the relationship between reading and project are S. Muratori, "Tecnica e architettura nell'edilizia attuale," in *Rassegna critica di architettura*, 1948, no. 3-4, pp. 3-21; idem, "Vita e storia delle città," in *Rassegna critica di architettura*, 1950, no. 11-12, pp. 3-52; idem, *Studi per una operante storia urbana di Venezia* (Rome, 1960); idem with R. Bollati, S. Bollati, G. Marinucci, *Studi per una operante storia urbana di Roma* (Rome: Consiglio Nazionale delle Ricerche, 1963); idem, "Struttura urbana e destino civile di Genova. Metodologia di Lettura del tessuto urbano e territoriale," *Quaderni dell'Istituto di Elementi di Architettura e Rilievo dei Monumenti della Facoltà di Architettura dell'Università di Genova* 1968, no.1, pp. 13-22. The development of Muratori's critical vision is illustrated in the following: S. Muratori, *Architettura e civiltà in crisi* (Rome: Centro Studi di Storia Urbanistica, 1963); idem, *Civiltà e territorio* (Rome: Centro Studi di Storia Urbanistica, 1967); *Autocoscienza e realtà nella storia delle ecumeni civili*, Lezioni dell'a.a 1971-1972, ed. G. Marinucci (Rome: Centro Studi di Storia Urbanistica, 1976); idem, *Metodologia del sistema realtà-autocoscienza, Dalle ultime lezioni dell'a.a. 1972-73*, ed. G. Marinucci (Rome: Centro Studi di Storia Urbanistica, 1978).

<sup>11</sup> On the concept of organism in the thought of S. Muratori, see Sylvain Malfroy. *L'approche morphologique de la ville et du territoire* (Zurich, 1986).

<sup>12</sup> G. Caniggia and G. L. Maffei, *Composizione architettonica e tipologia edilizia. I: Lettura dell'edilizia di base* (Venice: Marsilio, 1979); G. Caniggia, *Progettare il recupero, Prefazione al volume di G. Fioravanti* (Rome, 1983); G. Caniggia and G.L. Maffei, *Composizione architettonica e tipologia edilizia. 2. Il progetto nell'edilizia di base* (Venice: Marsilio, 1984); G. Caniggia, G. L. Maffei; A. Boccardo, D. Corbara, *Moderno non moderno. Il luogo e la continuità* (Venice: Marsilio, 1984). Giancarlo Cataldi, who is also now the leader of the group, *Sistemi statici dell'architettura* (Florence: G.e G., 1972); idem, *Lezioni di Architettura. Appunti dalle lezioni di Composizione Architettonica* (Florence: Alinea, 1981); idem, "Saverio Muratori," *Macmillan Encyclopedia of Architects* 3 (1982), pp. 258-259; idem, with F. Farneti, R. Larco, F. Pellegrino, P. Tamburini, *Tipologie primitive. 1. I tipi 'radice'* (Florence: Alinea, 1982); idem, "Saverio Muratori architetto (1910-1973). Il pensiero e l'opera," *Studi e Documenti di Architettura*, no. 12 (1984), 2d ed. (1991), pp. v-xiv.

<sup>13</sup> Aldo Rossi, *A Scientific Autobiography* (Cambridge, Mass., 1981).

<sup>14</sup> Among the most important articles are Jean Castex and Philippe Panerai, "Prospects for Typomorphology," *Lotus International* 36 (1982), pp. 94-99; idem, P. Celeste, and P. Panerai, *Lecture d'une ville: Versailles* (Paris: Le Moniteur, 1980), pp. 235; idem, Jean-Charles Depaule, and P. Panerai, *Formes urbaines: de l'ilot a la barre* (Paris: Dunod, 1977), pp. 230.

<sup>15</sup> Jean-Charles Depaule, "Pourquoi les fenestres? Les pratiques de l'ouvert et du clos au Caire," *Peuples Méditerranéens - Mediterranean Peoples*, no. 37, pp. 33-39; idem et al., "Actualité de l'habitat ancien au Caire: le Rab` Qizlar (Cairo: Centre d'Études et de Documentation Economique, Juridique et Sociale (CEDEJ)), Dossier 4-1985.

<sup>16</sup> Anne Vernez Moudon, "Getting to Know the Built Landscape: Typomorphology," in *Ordering Space: Types in Architecture and Design*, ed. Karen A. Franck and Lynda H. Schneekloth (New York, 1994), p. 308.

<sup>17</sup> The other two international conferences have also taken place at MIT. They are "Rethinking the Nineteenth-Century Town: The Morphogenesis of the Urban Fabric," spring, 1996 (proceedings are now in press), and "Courtyard House and Urban Fabric," Spring 1997.

Sylvain Malfroy

## Urban Tissue and the Idea of Urban Morphogenesis<sup>1</sup>

Interest in urban fabric as an object of rigorous study and a tool in design methodology began to emerge toward the end of the nineteenth century.<sup>2</sup> It blossomed in the 1930s, was renewed in the 1950s, and led to a lively international debate in the mid-1960s that extended through the seventies. These heady years of interchange saw the publication of a number of seminal works that opened up this new field of research. In 1931 Gustavo Giovannoni published his work, *Vecchie città ed edilizia nuova* (Old towns and new buildings); Saverio Muratori inaugurated the series of "Studi per una operante storia delle città" (Studies for an operative history of cities) with the famous volume on Venice in 1959, which was closely followed by other monographs on Como (Gianfranco Caniggia, 1963) and Rome (Guido Marinucci, Renato and Sergio Bollati, 1963). Aldo Rossi's *L'architettura della città* came off the press in 1966 and immediately became a classic, confirmed by its publication in at least five translations (the English version was published as *The Architecture of the City* in 1982), spreading the virus of typomorphology through schools of architecture over the entire globe. Finally (though in no way exhaustively<sup>3</sup>), Pier Luigi Cervellati, Roberto Scannavini, and Carlo De Angelis reached a wide public with their *La nuova cultura delle città* (The new culture of cities), a book that brought together their experience gained through the restoration of buildings in the historic center of Bologna. In order to identify the circumstances that led to the emergence of this field, it is first necessary to recount two distinct but dialectically connected stories: the first is the history of the city and the second is the history of ideas about the city. Interest in urban tissue came about through some of the more recent developments of the city itself and the decreasing relevance of traditions concerning the location, interrelation, and growth of urban components in space. But interest in urban tissue is also a part of intellectual history, inasmuch as the idea emerged within the context of debates on architecture and urbanism, which formed part of the effort to overcome the "abstract" controls of urban growth underlying then current rationalist ideas and the "mistaken" interpretations of the processes of urban formation that were put forward to legitimize rationalist planning.

We will first examine the crisis that brought urban tissue to the attention of architects and urbanists. We will then consider some of the theoretical developments that led to the idea of urban tissue and gave it its characteristic fertility.



## Urban Processes of Expansion and Contraction

Historical demography has identified four concepts to distinguish the movements and divisions of populations within a given territory (most often a region or nation): these are “urbanization,” “suburbanization,” “deurbanization,” and “reurbanization.”<sup>4</sup> These terms express the dynamics of expansion and contraction characteristic of modern urban areas—dynamics that highlight the fluidity of their limits and their close interdependence within a larger territorial system; they also identify the sequence of phases that have in the past marked the formation and reconfiguration of human settlements.

Applying these terms to the development of the city makes us realize how long the periods of time between two phases can be. After the deurbanization of the late-imperial period, for example, the city of Rome did not again exceed a population of 650,000—the number it had supported in the first century B.C.—until the end of the nineteenth century. The demographic trends, equally fueling or restraining the formation of cities, are to an extent like heavy seas: the high waves can be navigated by running a course at an angle to a wave (thus limiting the fatal consequences of taking them head on), but nothing can modify the waves themselves. Similarly demographic trends are not controllable by the acts of the people involved; they can only control the *manner* of their execution in the short term.<sup>5</sup>

Every time there is a change of phase following an inversion of migratory flow, we observe a transfer of settlement patterns from one context to another. In a phase of urbanization, for example, this is clear in the type of building: rural traditions are imported into city centers forming urban house types more and more resembling rural types. Conversely, in a phase of suburbanization or deurbanization, building details, typology and settlement patterns with urban origins spread over the periphery that are in complete contrast to rural traditions. This process involves an exploitation of the potential for diversification of built form offered by an environment that is relatively sparsely built. When the cycle is complete and the pressures are directed toward reurbanization of previously built centers, the encounter between the newer settlement patterns and the older one will result in a conflict, since the two are derived from different formative matrices.

This scheme is clearly a simplification, but nevertheless allows us to propose an elementary survey of conditions for the emergence of a crisis concerning urban tissue. It is possible to identify such conditions of crisis in each of the processes we have listed: the saturation of an urban center (overcrowding, congestion) in a phase of urbanization; the lack of infrastructure in a phase of suburbanization; the excessive dispersion in a phase of deurbanization; the conflicting patterns of old and new development in a phase of reurbanization. This last condition is also encountered in situations involving an area undergoing different processes at the same time, for example in the contrast between center and periphery, between periphery and the rural environment, and so on.

## Spontaneous Suburbanization and Planned Deurbanization in the 1930s

In the 1930s, the demographic circumstances of a city such as Milan favored the growth of suburban areas around urban concentrations that resulted from migratory movement in two directions—from the center and from the countryside—to the suburban fringe. This had the effect of promoting intense growth on the periphery, which the dominant political ideology of the period, favoring a totalitarian comprehensive planning pervaded by scientific positivism,<sup>6</sup> sought to control by fixing the limits of growth in existing built-up areas. They established programs for deurbanization of the more populated cities, realized through the construction of decentralized new towns, distributed according to rational principles. The famous *borgate* around Rome and the cities of the Agro Ponte, among others, arose in this way, and in the case of the latter, were populated for the most part by people from northern Italy.

We cannot dwell here on the motives of the political order that underlay these measures nor their selective application to rural and urban working classes. We must be content with the insight that the models used in rational urbanism were developed as an alternative to the existing city, and grew out of an ideology that did not suffer historicity nor the contingencies and randomness characteristic of demographic trends and their repercussions on the configuration of human settlements. Whatever their intentions, the impact of these attempts to decentralize urban growth was not proportionate to the pressure that drove the formation of peripheries. Peripheral growth continued, therefore, to increase in ways not predicted or understood by the specialists concerned. The discontinuity between the modes of aggregation of spontaneous construction and those derived from the experiments of rationalist theory in the name of reform became a challenge. In parallel with the programs of deurbanization was a desire to glorify the symbolic value embodied in historic centers. This was realized through the “liberation”, restoration, and recontextualization of major monuments in vast compositions of public buildings at the expense of older, stratified tissues. The result was the destruction of that which was intended to be preserved and emphasized. The urban compositions created to celebrate the urbanistic genius of ancient Rome, for example, were realized by monumentalizing the fora and rectifying street intersections in the manner of a *cardo* and *decumanus* with a very feeble grasp of historical accuracy. The demolition of tissues disparaged as “Gothic” not only wiped out the ancient substratum but also erased the traces of pre-medieval public buildings (theaters, markets, etc.) which had been assimilated into the structures of medieval and later residential buildings. In the end, the recovery of historic centers, viewed only as a collection of isolated monuments, proved to be a huge waste of historical material in the name of a memory that revealed itself to be a simulacrum.<sup>7</sup>

## Suburbanization of Social Housing after the Second World War

The phenomenon of massive post-war suburbanization brought about by the construction of public working-class housing combined with the difficulties faced by designers in conferring a more than superficial degree of urban character on these quarters generated a renewed interest in the subject of urban tissue. In this period, ideology was against explicit programs of social segregation through the transfer of lower-income groups to extra-urban areas. Rather, there was a desire to meet the housing requirements at low cost within existing built-up areas. However, the chosen method of financing social housing (INA-Casa) made it necessary to take advantage of low-cost land offered on the open market. This systematically favored peripheral sites in areas with very little infrastructure.

The designers, having come to criticize their youthful faith in a pure and rigorous rationalism, did not gravitate toward the model of the German *Siedlungen* as they did in the previous period of planned deurbanization. They turned instead to the subsidized quarters of the great Scandinavian cities, conceived as unitary, socially mixed neighborhoods. Thus, outside the centers, quarters arose that were typologically extremely mixed, with row houses, slab and tower blocks, as well as atrium buildings, reflecting the desire to respect in some way the individuality of the users and the multiplicity of needs. The urban character of the quarters was intended to be the result of diversity within an organism that was nevertheless uniform and with which the inhabitants might identify themselves. When these dispersed and isolated quarters were incorporated into the expanding city, they stood out as completely anecdotal events with respect to the morphology of their surroundings. Thus, by the time the designers had succeeded in creating what were intended to be components of the expanding city, the INA-Casa quarters ended up becoming alien elements within the suburban tissue, in terms both of morphological character and of adaptability over time.<sup>8</sup> A retrospective glance over areas such as the Tiburtino or Tuscolano quarters in Rome clearly shows how the factors of historicity (multiplicity of actors, non-contemporaneity of interventions, retroaction of the substratal matrix on the substitution of buildings, self-structuring effect of the city through its different levels of order, and the consecutive differentiation of polarizations) that make the city anything but a large, single building have, from the start, remained frozen in a completely formal style. The recognition, toward the end of the fifties, of this discontinuity between the quarters produced through comprehensive planning and the quarters that had been formed spontaneously presented a new challenge to the culture of urbanism.

The challenge was raised, from a neo-realist perspective, not so much by the desire for a reformed as opposed to the existing city, as by a preoccupation with endowing the periphery with the social qualities of space and environment that the traditional city always tends to retain. It was precisely

this theme of the traditional city, seen as the seat of use value and socially produced symbolic goods accessible to the whole of the community, that motivated the demands for changes that grew progressively louder over the course of the sixties. In these years there emerged a tendency toward reurbanization that was more economic than demographic. In fact, while continuing to lose inhabitants, the more central locations of the city saw renewed and increased investment in property, exploiting the return on urban land that had been driven up by the proliferation of suburban areas. This speculative renewal of the center tended to involve the substitution of less profitable functions such as low-rent housing with higher-yielding uses such as luxury housing, hotels, offices, etc. These interventions made a considerable impact on the social composition of the center ("gentrification") as well as on the typological consistency of building, at least where the central areas were not destroyed to make way for entirely new developments. It was the real threat of the annihilation of the city's historic fabric under the influence of economic pressures that awakened interest in a theory of urban tissue in terms of the collective inheritance.

The phenomena of discontinuity brought on by the formation of the city were a spur to contemporary consciousness, underlining not only the precariousness but also the efficacy of the various "tissue structures" coexisting in an area, reinforced by their social, cultural, functional and aesthetic value. Our survey of critical moments in the development of the city would not be complete, however, without a nod in the direction of urban blight. Seen as a random and dispersed phenomenon, it went relatively unnoticed. What is more, because it did not affect the more valued parts of the city (the historic center) as much as industrial and commercial areas, it was not immediately perceived as a sign of substantial change. Nevertheless, as soon as urban blight began to affect larger areas, at times involving entire categories of building, it became clear that it was a matter of a systematic and selective migration of urban functions. In fact, the four demographic processes of urbanization, suburbanization, deurbanization, and reurbanization, are not limited to entire urban concentrations. They also occur selectively, within different functional sectors such as the industrial (production), service (management, administration and retail), and residential sectors. For example, the textile industry during the Industrial Revolution favored urbanization in order to take advantage of the economies of a central location, but the owners of these textile companies moved to suburban villas. Later, companies began to divide their constituent activities, transferring those with no need for a central location to the suburbs in response to the high cost of inner-urban land. Today, the new technologies of telecommunications have allowed services traditionally found in the center, such as banks and insurance companies, to relocate to the suburbs. More precisely, they have moved outside the center to positions with better access to large regions, often at the intersections of freeways, in order to

fight the costs in time and energy imposed on their employees by the congestion of central urban areas.

All these movements of the various urban functions leave gaps that, when spread over the entire area, seriously threaten the coherence of the settlement, systematically altering entire categories of building. Anglo-American geographers have recently coined the terms residential blight, industrial blight, and commercial blight to distinguish the specific instances of blight associated with the abrupt relocation of particular urban functions.

The reuse of these areas poses very serious problems in the choice of operative criteria for the contextualization of new interventions. This is so because interventions in these areas necessitate a choice between a more radical restructuring and improvement at the scale of the entire agglomeration or adapting the site to its context with small-scale development that plays a part in the dynamic functional equilibrium of the area and its network of social spaces established over time. On the one hand, to take this second choice for a large site might prove insufficient for realizing its potential as a node or pole within the hierarchy operating on the scale of the entire city. On the other hand, to work on these large areas, taking for granted their quantitative and qualitative transformation relative to the city as a whole, is to gamble on the progress of history and potentially to precipitate the disintegration of entire portions of an urban area.

Efforts to deal with urban blight have met a challenge in the design of replacement tissue, because both the idea that various small-scale parts might be "interwoven" within the area and the methodology for large-scale restructuring to take advantage of the real forces of transformation of the city remain controversial.

### **Urban Tissue as a Theoretical Concept**

Urban tissue as a theoretical concept grew out of the slow process by which significance was attributed to a reality that, while it lay in full view for all to see, had remained interpreted as chaos. The process by which it had emerged took on the character of discovery, and we can, with good cause, speak of the modern invention of urban tissue inasmuch as its structure and rules were not evident in the evolution of the city until they were revealed through historical and theoretical analysis. It might appear paradoxical that it was necessary to invent something that already existed. In speaking of urban tissue, therefore, we must take care not to confuse object with concept, material with form, facts with significance, the variety of component elements with the system of variable relations that can be identified between those elements. It is also necessary to identify the different processes by which the complementarity of these pairs might be altered. The material might persist, while in the collective memory the form might be forgotten or, conversely, the image might persist, emptied of its substance.



The specific contribution made by theoretical inquiry consisted of the objectification of a reality that had, up to then and at the reflective level, remained unrecognized. In addition, the exploration of urban tissue held promise, inasmuch as the refinement of analytical methods and typological categories made it possible to take more and more case studies into account and therefore to elaborate more and more detailed hypotheses on the nature and workings of formative processes. It is a long way from the positive identification of urban tissue, in the face of a common opinion that sees it as nothing but chaos, to the ability to analyze and understand its finer inner structures. In retrospect, it is easy to judge too severely the practice of the first urbanists who tried to prevent the waste of richly stratified tissues. It must be remembered how little surveying, research, and publication concerning urban tissue had been done at the time. We can measure the methodological progress made between the 1930s and the 1970s by comparing, for example, Luigi Dodi's still very worthy studies of Roman urbanism, in particular of the historic center of Como (done in connection with the proposal by Gruppo Bottoni for the 1934 PRG<sup>9</sup> competition) with Gianfranco Caniggia's reconstruction of the genesis of tissue in the walled town of Como published in 1963, or the studies by Saverio Muratori made for his course on the distributive characteristics of building in Venice and the hypothetical reconstruction of the building process advanced by Caniggia and Paolo Maretto in 1986.<sup>10</sup>

So far we have dealt only with what can be termed the "material" conditions that have threatened the physical substance of urban tissues. We shall now seek to understand the theoretical insights that have contributed to the discovery and maintenance of urban tissue, not only as a collection of objects but also as a set of principles to be used in the effort to counter the tendency toward its obliteration.

The various practical problems we have highlighted—such as the protection of monuments, the monumentalization of historic centers, the rational planning of sub-centers in decentralized urbanization, the planning and building of urbane residential areas, the restoration and maintenance of historic buildings regarded as the "collective inheritance" with a socially produced use value, the planning and building of replacement tissue to fill cleared areas—have all been solved at any given time within the limits of the knowledge available and with ad hoc solutions of extremely relative value. The urgent need to respond did not allow enough time to wait for what might be considered "secure" knowledge concerning the best way to proceed—secure in the sense of being based on a sufficiently large body of documentary evidence and sufficiently explicit theories. There was, and continues to be, unequal development of theory and practice, and actual proposals cannot be seen as illustrations of current theoretical and methodological developments. Nevertheless, the examination and critique of actual projects tend to give them, a posteriori, an experimental value that can be realized within the framework of a process of learning.

In retrospectively examining the problems identified, the means employed (often chosen as a matter of urgency, as we will see), and the results obtained, one can set oneself wondering: did the problem to be solved really present itself in the manner in which one perceived it at the moment when one could act on it? Were the means employed the best of those from which one had to choose in order to attain the desired end? Was the end that was offered as a solution truly a way out of the original problem? All these questions, fundamentally of a hypothetical nature, are well known to those familiar with the polemical debates that attended, for example, the campaign to restore the historic center of Bologna in the 1970s or that are presently unfolding around the projects to repair the city of Berlin.

Certainly, hindsight seldom changes the results obtained but, all the same, the debate is not entirely vain insofar as it is possible to modify the way one responds and acts in the future. In this respect, it seems to me that since its formulation in the 1930s, the theorization of urban tissue has served to prompt a re-examination of prejudices, a reconsideration of established habits, and a revision of what the city is and how to act upon it in order to sustain its "life" (to paraphrase Jane Jacobs and her well-known book, *The Death and Life of Great American Cities*). What happens if one represents (metaphorically) the city as something "woven" (*tissu* in French refers to a woven textile) rather than as an expanding spot of oil, a nebula, or a chest of drawers? Proceeding in this way, one makes a hypothesis regarding the manner in which the city organizes itself. And, by selecting one mode of organization as more probable than the others (in relation to such a context), one implicitly prescribes a certain range of means considered as more likely to produce certain desired effects. When one thinks of the city in terms of "tissue", one inevitably perceives aspects of the city that might not be seen or might be neglected by those who think of it (or desire to see it) in terms of a "botanic garden", with species carefully classified and neatly labeled, or as a "production line".

The variety of metaphors that I have used here—to the point of caricature—has the benefit of helping me to clarify the difficult notion of the "typological framework" (*quadro tipologico*). The typological framework is a systematic collective representation of reality, in our case of urban reality, that allows one to make a diagnosis and relate the need for action and the instruments available: using the typological framework as a reference, one can go on to choose the operational response for a recognized situation of a certain type that one judges likely to produce such a typical effect. When the result obtained is unexpected, and so "abnormal", the typological framework falls into crisis.

I would like to submit the thesis that the theorization of urban tissue as a concept has been, and will remain, motivated by the chronic inability of that form of urbanism called "progressive" (*progressiste*, after the terminology of Françoise Choay) effectively to match its means with its ends, in other words, the incapacity to master the complexity of urban areas in time without replacing that complexity with a reductive and caricatural schematization.

## Categories for Representing Urban Change

We can illustrate the point with an examination of the categories used to guide the perception of the historicity of the city as well as the various settlement patterns in the countryside. The discontinuity perceived toward the middle of the nineteenth century corresponded to the moment in which the city began to develop in a decidedly more open manner.<sup>11</sup> This was made possible in states with liberal constitutions by the abolition of the politico-juridical division of city and countryside. The discontinuity thus came to be seen as a discontinuity<sup>12</sup> between a past and a present in which the superseding of the past inaugurated a radically new future. The application of this perception of history to the perception of space established a breach between the historic city (considered completely superseded) and the future city, which must be designed in its entirety. This elementary typology for ordering history and its progression—one that dramatizes a partial discontinuity at the politico-institutional level in terms of a complete breach (total revolution)—makes it impossible not only to recognize the complexity and richness of the present but also to realize the potential for change inherent in the structure of existing settlements. By focusing exclusively on the elaboration of alternative models of settlement relative to the inherited city (such as the garden city, or other kinds of isolated communities in the countryside), planners took advantage of and celebrated the tendency toward suburbanization and deurbanization without, however, succeeding in framing the building activity underway and realizing their aims. The projects frequently remained only partially completed; the suburban fringes of agglomerations disposed themselves according to rules and conditions other than those envisaged in the models (preexisting road layouts, property and polarization patterns).

At this level of historical category, there was a need for a concept of differential rates of change that would distinguish between that which evolves according to a continuous process, that which emerges as a result of a partial break, and that which remains essentially “out of time”. The identification of these historical rhythms came out in a typology of the levels of order of built form according to their behavior in time. For example, the landscape as a whole with its built armature and networks of infrastructure remains relatively inert, individual buildings show great adaptability, monuments remain as permanent features, while urban tissue in peripheral locations shows an intermediate degree of changeability.

The need to distinguish different rates of change in the structure of settlements attracted a consensus in the “typo-morphological” debate even if opinion diverged on how to conceptualize the interdependence between these histories: whether it was a dialectical relation (Aymonino), organic process (Muratori, Caniggia), or random interference (Rossi).

If we proceed further in our critical examination of the categories for the periodization of the settlements current at the end of the nineteenth century,

we find a distinction between the planned and the unplanned (spontaneous growth) city, a distinction that did not, however, attract a consensus. On the one hand, the fervent admirers of Roman urbanism emphasized the role of planning in the establishment and growth of cities and the rational matrix of all settlements even if that matrix was eventually obscured by later developments. On the other hand, the admirers of the medieval town emphasized the organic character of the city in its symbiotic existence with its surroundings and natural social structures. Confronted with the built fabric, these assertions are rapidly idealized. In fact, the analysis of ground-plan surveys shows that cities of Roman foundation alternated between phases of rational planning and spontaneous growth in the process of their development, contradicting the view of the city as a static implantation that might maintain its initial arrangement throughout its history. Analogously, for the medieval city, one observes an alternation of periods of institutional control with periods of more random building activity. Further, the frequent development of settlements formed around existing structures militates against the distinction of two separate forms of development, making any choice between the two irrelevant.

Thus, consideration of historical material indicates that the act of planning is neither radically generative nor absolutely final with respect to the formation of a settlement. Rather, it is a component within a cyclical process that also includes periods of reuse, adaptation, spontaneous densification, and partial restructuring. Given this view, it is necessary to reevaluate the expectations associated with the generative power of plans and planning. Seen as an instrument of transformation more than formation in its proper sense, the plan, or project, necessarily involves the substratum into which it is set and therefore necessarily engages with the "past". The rational character of the project changes and is susceptible to a dialectic: rationality does not necessarily reside more in the fact of using a logic dissociated from existing conditions, establishing an improbable, eternal order than it does in the capacity to make use of the nature of the context of an intervention in a way that knits it more successfully into the flow of history.

### **Categories of Description**

Revitalizing the representation of history rather than seeing it as a succession of disconnected epochs pulls the foundation out from under representations that see in monuments the pure and precise embodiment of the spirit of an epoch, of a "style". It undermines those representations that tend to classify built form into a distinct corpus of "Gothic", "Renaissance", "Baroque" houses in order to reinforce the idea that actual interventions must express, without compromise, their membership in the modern age. So, if we cannot find stylistic purity in monuments and if "Gothic" houses in fact reveal a

continuity of use through various adaptations up to the present day, we must break the tie between form and period and dismantle the unity of the object. The object does not register the passage of time in a homogeneous fashion at every level of order in its structure. It is possible for change to occur at the level of architectural details without alterations at the level of the disposition of rooms or construction. Likewise, it is possible for a house to be added as a part in a more complex composition and still impose its dimensional characteristics and requirements for light and orientation, etc. It is even possible for a house to be destroyed and still continue to exercise some influence on substitutions through its imprint on the context. Thus in the flow of history any built object (a house or several houses together) tends to be subject to a partial conditioning from previous forms (the formative matrix) and to have a partial influence on the form of successive interventions. This dialectical interconnection of form in time between forming and the formed suggests the hypothesis of a *morphogenesis* of built form. This means that, in the production and configuration of a built object, everything does not originate in the will and freedom of the creator; the process also involves non-intentional elements.

If this hypothesis holds, it also contributes to a reconfiguration of the role of the designing subject in the process of transforming built form. On the basis of the ideas of period and style dear to the historians of the 1800s and their modern heirs, monuments and individual parts of the city placed in a period according to stylistic categories testify to a collective will and artistic intention of a community seen as a synthetic macro-subject of individual wills. Yet if this were truly the case, how do we explain that at particular moments, the collective was not able to recognize what it had produced over the course of centuries as its product, but instead dismissed it as chaos? If the fabric of the city were an intentional product, the collective would not have had to try so hard to take possession of it.

Instead, the hypothesis of morphogenesis suggests that building activities occur in a temporally diffuse fashion through a complex play of individual initiatives not coordinated within a macro-subjective project. And it is for precisely this reason—the temporal diffusion of interventions—that the resulting collective product is of an order that is properly structural and therefore not intentional. The retro-action of individual interventions, one on another in the course of their aggregation through time, tends to establish a framework of conditions that is not explicitly desired as such but somehow always exercises an influence on operations of substitution and partial alteration. These anonymous structures, resulting from the interconnection of a multiplicity of successive acts of construction, are, then, what is metaphorically called tissue.



## **Urban Tissue from Theory to Application in Design**

Studies in urban morphology over the last ten years have managed to reveal with a growing degree of reliability the extent to which the phenomenon that had first been seen only as chaos does in fact have a distinct structure. In demonstrating the non-intentional character of the principles that regulate the evolution of tissue, these studies have acted to divorce design activity with respect to the individual as well as to the social community. The design methodologies that come to such conclusions would, therefore, be in danger of contradicting themselves by again imposing personal expression in design on a process that they suggest is anonymous. Rather, their strategy consists in an effort to develop and reinforce the matrix of existing structures that might be recovered. Nevertheless, as we have seen, the internal structure of built form (buildings, towns, or regions) is never given from the start but must be discovered or invented, through intensive work developing new hypotheses and techniques for analysis; the desire to work in continuity with formative processes does not allow one to avoid the subjective component of design. The matrix from which one might wish to work must first be constructed. This circularity is only paradoxical in appearance because there is a difference between the logical coherence of a design (the correspondence between the solution suggested and the problem posed) and the process by which the solution was reached (the solution can only come after the identification of the problem and its context). For a designer such as Gianfranco Caniggia, design research is considered complete when the form that has been sought appears to have been generated by the context itself, as if his personal intentions had been absorbed by history. Nevertheless, those of us who see his designs notice that they are the key to understanding the surrounding context. The form that has been newly shaped can have an effect on the material of the city previously formed.

### **A Brief Summary and Conclusions**

Urban tissue, as an aggregate of substitutable elements, is involved in a complex relation with time. Past and present coexist indissolubly and even the future is to some extent anticipated by the relatively stringent principles of formation. By these properties, tissue is marked both by an inherent precariousness and potential stability. On the one hand, it is always threatened by the fact that it is made up of non-contemporaneous elements and values (the street system, the pattern of property divisions, built components, building details, and models of housing all of which evolve according to their own rhythms). On the other hand, it is by just this capacity to integrate diverse elements and absorb the contingencies of history within a continuous stream that tissue has been recently—and retrospectively—recognized as a valuable tool. Thus, today, tissue stimulates theoretical

curiosity because of its double nature: a form that in the long term is both formed and formative.

## NOTES

<sup>1</sup> The following text was written at the request of Gaia Remiddi, architect and professor at the School of Architecture of the University of Rome "la Sapienza". The original version, written in Italian, appeared in 1993 in the journal *GROMA, Rivista del dipartimento di architettura e analisi della città dell'Università di Roma "la Sapienza"*, 11 June 1993, pp. 21-27. The editor of the journal had asked me to explicate the theoretical background to the projects for urban tissue of Gianfranco Caniggia, also a professor at the University of Rome, who died suddenly in 1987. The issue of the journal was intended as a homage in memory of Caniggia and included a number of drawings accompanied by a short commentary. In relying on the complementarity of these two parts, I did not find it necessary constantly to refer to specific projects by Caniggia for the city of Rome. On the contrary, I hoped to show that Caniggia's projects for tissues had contributed magisterially to a clarification of his method and could be seen to emerge as a response to certain general developments of the contemporary city as well as part of an intellectual debate that had gone beyond the bounds of the Italophone world. Attilio Petriccioli was sympathetic to the general aim of my article and was eager to make a place for an English version in this collection. I would like to extend my thanks to Karl Kropf of London who was happy to take on the task of translation. For a sample of the urban projects referred to in the text, see Heinrich Klotz and Vincenzo Pavan, eds., *La nuova scuola di Roma/Rom, Neues Bauen in der ewigen Stadt*, exhibition catalogue, Deutsches Architekturmuseum, Frankfurt-am-Main, 1987; *Ridisegnare Venezia: Dieci progetti di concorso per la ricostruzione di Campo di Marte a Venezia* (Venice: Marsilio, 1985); see also the student projects included in the manual, Gianfranco Caniggia and Gian Luigi Maffei, *Composizione architettonica e tipologia edilizia, 2. Il progetto nell'edilizia de base* (Venice: Marsilio, 1985).

<sup>2</sup> See chapter 5, "L'invention du patrimoine urbain," in Françoise Choay, *L'allégorie du patrimoine* (Paris: éditions du Seuil, 1992).

<sup>3</sup> A bibliographic review is included in my *L'approche morphologique de la ville et du territoire*, Eidgenössische Technische Hochschule Zürich, Architekturabteilung - Geschichte des Städtebaus (Zurich, 1986). For more recent theoretical and historiographical writing concerning urban tissue, see the bibliographies and references in Pierre Merlin, ed., *Morphologie urbaine et parcellaire* (St. Denis: Presses universitaires de Vincennes, 1988); *Saverio Muratori: architetto*, Biblioteca civica di storia dell'arte 'Luigi Poletti' di Modena (Modena, 1991); Anne Vernez Moudon, "A Catholic Approach to Organizing What Urban Designers Should Know," *Journal of Planning Literature*, 6, 4 (May 1992).

<sup>4</sup> For a very good introduction to this terminology, see W. Gaebe, *Verdichtungsräume* (Stuttgart: Teubner, 1987). The concepts (urbanization, suburbanization, deurbanization, reurbanization) have been borrowed from the field of historical demography for application to human and urban geography. In the latter fields, their meaning tends to be broadened to include the pertinent characteristics identified through a consideration of the changes of form that settlements show

under the pressure of migratory movements. That is, while the concepts principally describe *processes*, they nevertheless can be applied in the description of *forms* of human settlement. There are, therefore, narrower and broader definitions of these terms. This can lend a sense of confusion to any discussion inasmuch as the definitions suggest the existence not only of a dynamics of development oriented in various ways, but also the existence of distinct objects with definite form and a quasi substantial status in an ontological sense. This slipperiness in the descriptive viewpoint is clearly noticeable in analyzing the first conceptual pair mentioned above: urbanization as a process in the formation of the urban center. Urbanization in its strict, demographic sense describes the degree of concentration of the population in terms of the proportion of inhabitants residing in urban centers in relation to the total number of inhabitants in the region or nation under consideration. Urbanization also refers to the demographic growth within these concentrations and to the increase in their number within a given area. In this sense, however, the use made of the concept of urban center is purely nominal: it identifies a pole of migratorial confluence without qualification by material attributes. From the geographical perspective, urbanization comes to be seen as a process of producing spatial structures, which, proper to their material characteristics and intrinsic qualities, are the seat of further effects and dynamics of transformation of the social body. The urban center is then described as an environment for specific modes of life with its own phenomenology. When this realistic sense of urban center is taken up in common usage and becomes institutionalized to the extent that it forms the basis of day-to-day decisions in the management of urban space and the administration of the urban collective, it functions as a norm for action. In turn it serves as a basis for distinguishing between normal and abnormal phenomena, the latter calling for the exercise of control or remedial action. It might be worth the trouble to examine in greater detail the implications and effects of the terminology used to categorize the continuum of settlement structures.

<sup>5</sup> I do not want to present these processes of agglomeration and degglomeration as the result of a natural determinism under which no action might intercede. It is clear that there is an interdependence between demographic movements and certain historic events such as the creation or withdrawal of jobs, the restructuring of social organization in order to ensure security and well-being of individuals, etc. Nevertheless, I feel it is important to highlight the inertia that demographic processes present to every regulatory intervention measured in the short term. That long-term interventions might be desirable in order to avoid regional disequilibrium and underdevelopment in the periphery is to me undoubted. This fact does not contradict the idea that short-term control of the consequences of demographic shifts can do no more than manipulate the manner in which they occur.

<sup>6</sup> Salvatore Natoli has examined in great detail the way the links between the philosophy of history, scientific positivism, and political voluntarism converged, resulting in a view that considered every innovative action in the 1930s as a contribution to a total revolution. See chapter 2 of Giovanni Gentile, *Filosofo europeo* (Turin: Boringhieri, 1989).

<sup>7</sup> The inherent contradiction of these developments, on the periphery as well as in the center, was noted by Gustavo Giovannoni, among others. Giovannoni pointed out the need to start over from a position of greater knowledge concerning the historical make-up of the urban armature and infrastructural network of a region in order to avoid the ineffectiveness of urbanistic voluntarism. Counter to the

functionalist thesis, Giovannoni argued that urban tissue and scattered urban nuclei of ancient origin have the inherent capacity to accommodate new uses and to take on new roles, even within a program of reorganization on a regional scale. He proposed a methodology of selective "thinning out" of replete or congested tissues in such a way as to guarantee a continuity of use, achieving standards reached in other parts of the city, while at the same time maintaining the typological variety of houses and characteristic plot pattern. With this methodology, Giovannoni also intended to set out an alternative to the then current practice of "creating a setting" for monuments. In contrast to others, he recognized the indissociability of landmarks and ordinary buildings in constituting the stratified tissue of the city. On the figure of Giovannoni, see G. Zuconi, "La nascita dell'architetto integrale in Italia," republished in French in *Annales de la recherche urbaine* (Paris, 1990); C. Ceschi, *Teoria e storia del restauro* (Rome: Bulzoni, 1970); Alessandro del Buffalo, *Gustavo Giovannoni* (Rome: Kappa, 1982).

<sup>8</sup> For an excellent account of the INA-Casa quarters as an urbanistic experiment generating renewed interest in the formative processes of tissue in historic centers, cf. Gianfranco Caniggia and Gian Luigi Maffei, *Il progetto nell'edilizia di base* (Venice: Marsilio, 1984), pp. 289 ff.

<sup>9</sup> See the tables presented for the competition and the comments of Agnoldomenico Pica, in *L'Architettura* 13 (1934): 741-52.

<sup>10</sup> The hypothesis was published in Paolo Maretto's *La casa veneziana nella storia della città dalle origini all'Ottocento* (Venice: Marsilio, 1986).

<sup>11</sup> Carlo Aymonino has made a very careful analysis of the morphological aspects of this process of opening that assails the cities of liberal-bourgeois states; cf. *Lo studio dei fenomeni urbani* (Rome: Officina, 1977).

<sup>12</sup> Of indispensable value to our problem is Remo Bodei's account of the history of the idea of the epoch in his work *Scomposizioni: Forme dell'individuo moderno* (Turin: Einaudi, 1987), pp. 203 ff.





*Giancarlo Cataldi*

## **Designing in Stages**

Theory and Design in the Typological Concept of  
the Italian School of Saverio Muratori

The design method of the school of Saverio Muratori is based on the dialectic relationship between complementary and reversible moments in historic-typological research and the stages of design development. I am going to concentrate here on this second aspect because its experimental nature, which is at the same time both innovative and problematic, is betrayed by the scarcity of existing design examples coupled with the vast quantity of literature, which for decades has been the hallmark of our school.

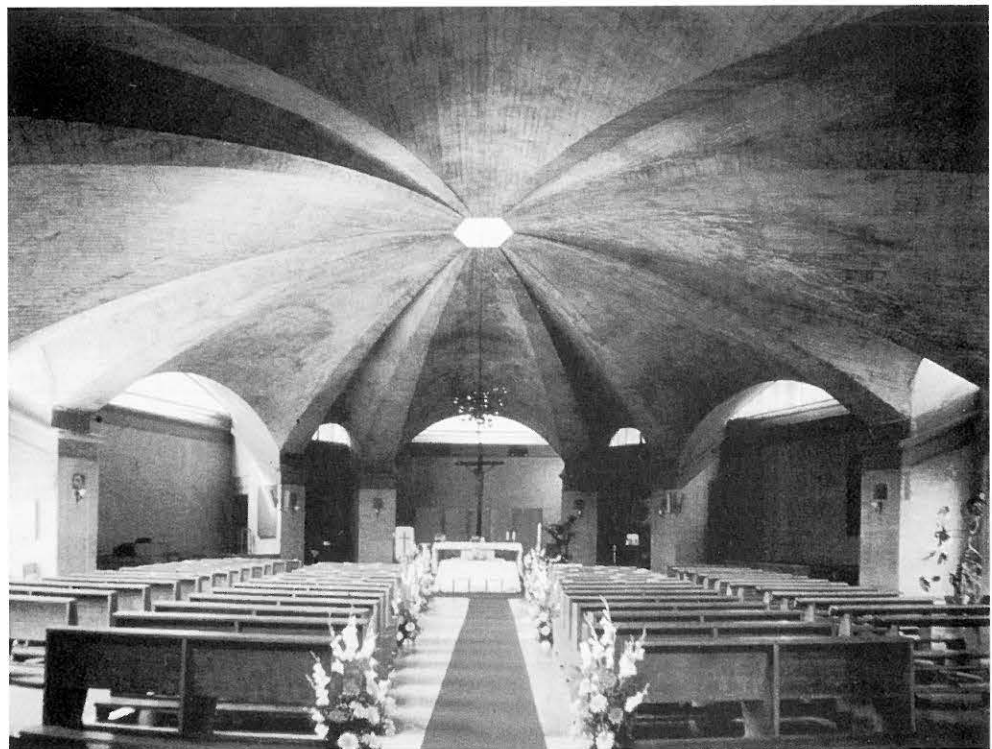
The three designs I will discuss were chosen to exemplify the meaning and goals of our method of envisaging future research in design. These could have interesting practical repercussions, as we can glean from recent computer developments in virtual reality and their capacity to simulate certain situations in space.

Before going into the designs, however, it is first necessary to summarize the theoretical assumptions at the root of Muratori's ideas. These are:

1. Building type is a priori a synthesis or a spontaneous living concept peculiar to a culture, variable in time and space. Our typological current is based on this well-known, commonly quoted definition. It was developed by Gianfranco Caniggia, but we need not go into it here. I will just mention the innovative notion of "spontaneous design," especially with regard to the analytical and classifying logic of eighteenth-century positivism, which was in Muratori's case almost definitely the result of an intuition that developed while he was studying the architecture of Venice.
2. Building history is a sequence of spontaneous constructional phenomena. This is the logical consequence of the first assumption, and it implies the continuity of building development in a given cultural area (especially in towns), a process that is the main reason for its historic structure. Because of this, the process can be retraced in stages that, because of the loss of spontaneity in building today, provide a critical design reference to the development trend deducible from the reconstruction itself. Projected in time, it also implies a more aware design that as a rule avoids individualistic contrasts with the surrounding historically established environment.
3. The history of architecture is a sequence of designed constructional phenomena. It has no bearing on the scale of special buildings, apart from expressing the greater intentionality of the architect designer and



*Low cost housing in  
Tuscolano Quarter in Rome  
designed by Saverio Muratori.*



*The crypt of the church in  
Tuscolano Quarter designed  
by Saverio Muratori.*

the typological influence that greater cultural areas can have on him. This is the reason for the greater complexity and delicacy of architectural design, which Muratori translates into the concept of working history. This must be more specifically taken to mean critical awareness, or capacity to limit the subjective tendencies of individual designs, which can critically be traced back—always in terms of the reconstructural reading of the applicable typological processes—to one's own evolutionary currents.

4. The crisis in modern architecture is a typological and linguistic crisis. This was Muratori's starting point in the early seventies, when he stopped designing to concentrate on the systematic exposition of his thought, which remains architectural thought, i.e., thought that tends to interpret reality through architecture. The concrete expression of human civilization is capable of structurally changing the face of the earth to its own ends. The present crisis of the modern world is, therefore, civil and, at the same time, architectural. It is deeply rooted, essentially due to growth and a loss of historical insight, and its combined effects inevitably cut the process both in terms of building typology and architectural language. Hence the need to try to fill in the gap through the design method based on the dialectic between reading and design.

Now to our three experimental examples. The first is a design for the S. Giuliano Sandbank Competition in Venice. This 1959 competition represented a turning point in the development of Italian architecture over the previous fifty years. It marked the passage from the town-planning decade of post-war reconstruction to the decade of the so-called economic miracle.

During the fifties, Italian architects were busy planning "INA-Casa" residential areas which involved two main problems: first, the typology of council housing, and second town planning in terms of the formal composition of new neighborhoods. Saverio Muratori was one of the most active architects in this period. As head of a group, he was responsible in Rome for the Stella Polare district in Lido di Ostia (1948-49), Valco S. Paolo (1949-50) and, especially, Tuscolano II (1949-51), where he designed a "boomerang" building and the incomplete church in front of it.

For these projects, the formulas of the Modern Movement, widely used by him in his prewar designs, appeared inadequate. In his *Vita e storia della città* (1950), he raises for the first time the need to determine the characteristics of an urban organism and to adapt modern building to it. Venice played a leading role in the development of his thought because it was when he was teaching about Venice (1950-54) and during the first student surveys of the lagoon town that his research began. It resulted in 1959 in the publication of *Studi per una operante storia urbana di Venezia* in which we find the first basic definitions of building type, urban fabric, and urban organism, developed afterwards by his school.

But it is the concept of "working history" that drove him to check his theories.

It almost seems that the S. Giuliano Sandbank competition was held to challenge him with its explicit request for an amphibious settlement between terra firma and the lagoon, offering Venice a sort of “double” that would be nearer and less peripheral than present-day Mestre. It was to be a real town, independent in its links and facilities, located along a strip of inland lagoon facing Venice.

We do not know exactly how the idea of the design in stages came to mind as a logical result of “reading” the town’s development. Some of his assistants said that the competition gave him the chance to focus on its contents, and to check its logical processes and design capacities for the first time. They begged him in vain to take part in the competition. When they had given up hope, he suddenly turned up at the studio with the usual scribbled-on envelope, featuring three plans. They were not alternative solutions to be compared for a final choice, but stages or orderly variants of a single design process, largely following reading hypotheses on the formation of Venice. From that moment on all three plans were processed and developed by the group and presented at the competition as complementary plans. They not only had the same graphic cover, but the same introductory report and the word “Estuary” with a roman numeral identifying the stage.

The main reference was to Venice’s urban history, deemed in its structure and morphology to be very modern and avant-garde on account of the particular land-and-water relationship that is typical of it. In its very nature lies the answer to one of the most difficult problems in modern metropolises: how to separate pedestrian from vehicular paths. Generally speaking, the principle of adaptation to the environment is the key to Muratori’s program. The new lagoon settlements were—according to the report—“to tend towards organic plotting in physical nature and in civil tradition.” It is a concept several years ahead of its time in its definition of territory, later developed in *“Civiltà e territorio (1967),* which represents one of the pivots on which his philosophy turns.

Adaptation to the environment, however, does not only mean observance of or passive defense against nature, but a continuously evolving anthropic space, implying the addition of new buildings, so long as they fit in with the building heritage. In this sense, typology guarantees the best possible technological and practical rendering of, and adherence to, the architectural forms of the cultural area.

Muratori’s choice for all three stages of the estuary plan provided for building along the two banks of the V and keeping close ties with Venice, whose profile acted as its constant visual reference beyond the lagoon.

The plan featured some very interesting points. According to the report these were:

Estuary I: “An estuary town in districts consisting of the same number of islands, of the same shape, size and structure, grouped into four or five elements connected together and to dry land by means of bridges

or dikes and giving rise to self-contained units placed along the opposite banks of the estuary featuring carriage links. This plan represents a tasteful, modern version of the eleventh-century plan of Venice; what makes it modern is its residential isolation and greater contact with its natural environment."

Estuary II: "An estuary town with self-contained districts comprising the same number of peninsulas featuring a typical structure, placed parallel to one another along carriage penetration axes and separated by canals, according to a dual water and land drainage route plan. The peninsulas are placed with axes converging in an amphitheatre around the basin, ending in a larger canal facing the last building unit set aside for facilities. This plan represents a tasteful modern version of Gothic Venice; what makes it modern is the extreme clarity of its various sectors, thoroughfares and spaces."

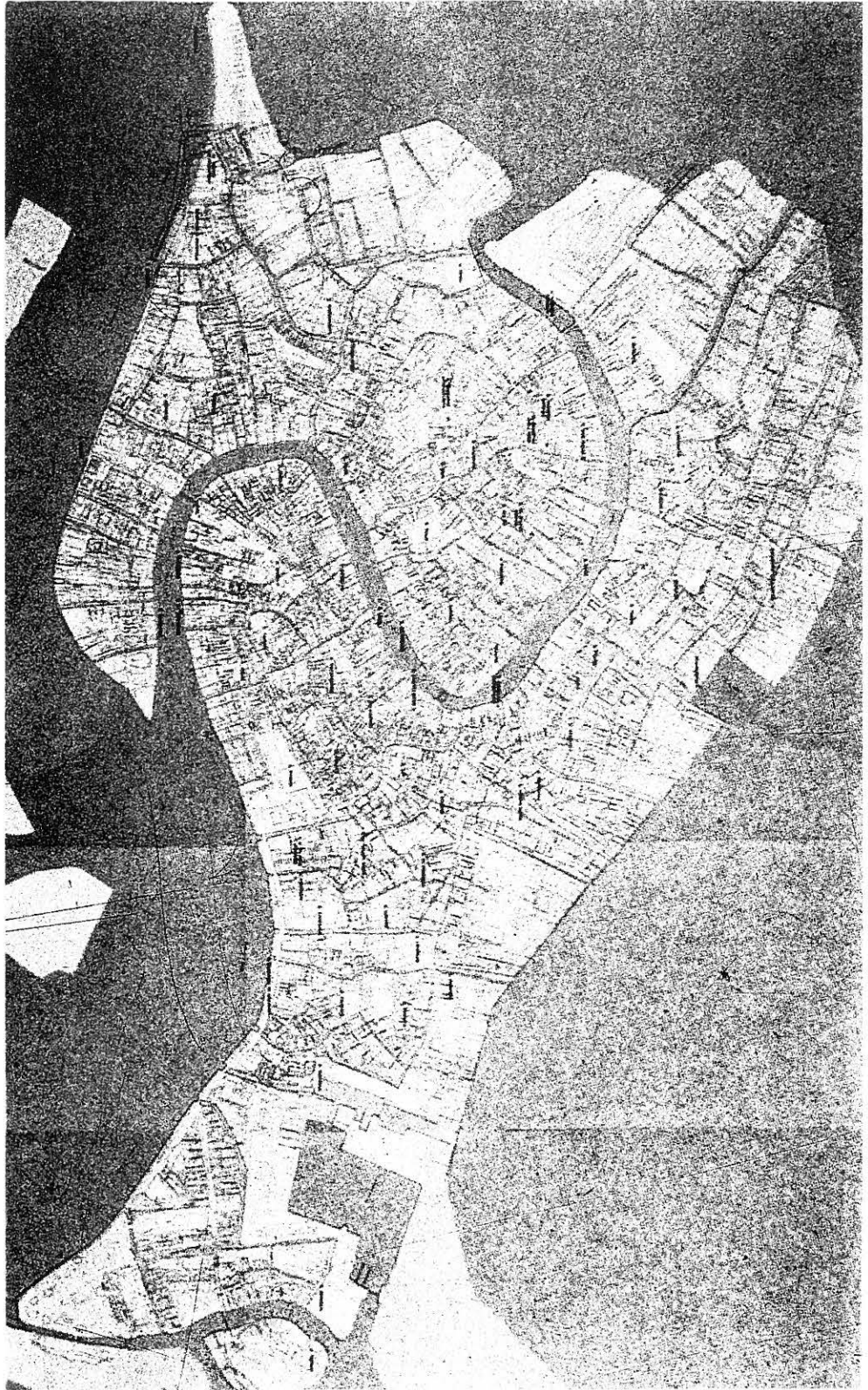
Estuary III: "A town with districts located in a dual strip along the bases of two opposite arms of the open estuary gradually opening towards the lagoon in sight of Venice, with dual longitudinal and transversal plotting of canals comprising two series of islands placed side by side and linked along the orthogonal axes of each island to form a whole capable of averaging the characteristics of the two previous plans. This plan is inspired by examples from the most recent Venetian town planning (16th-18th centuries), which is already basically modern, reflecting in its richness the increasing uniformity of the social structure and in its width the spreading of the town, accentuated here by the prevalence of land routes over water routes, not only because of the times, but also because of the position of the new lagoon expansion, which is coastal and no longer insular."

Every stage is characterized by specific references to the fabric and types of Venetian historic building: by the examples of original nuclei in square *campi*, with a church and palace, to the linear fabrics of the Gothic era, building up to more recent Renaissance systems in a crescendo which is also intended to highlight the progressive increase in complexity of the types used.

The results of the competition are common knowledge. Muratori and his group won first prize with Estuary III, and an honorable mention for Estuary I. The contrast between his methodological line and the so-called modernist line represented by Ludovico Quaroni's design, which won second prize, is clear and explicit, especially in view of the controversy over the first anti-Muratori campaigns that followed soon after with a student uprising in the Faculty of Architecture in Rome. This led, first to his progressive isolation and then, after 1968, to his removal from the Italian scene, which in my opinion is one of the most ignominious events in our architectural culture, and which the recent partial critical reappraisal of his work is now trying to remedy.

The second exemplary design is the design for Ca' Venier dei Leoni for the Venice Biennale. The fascination with Venice, which is tied to its

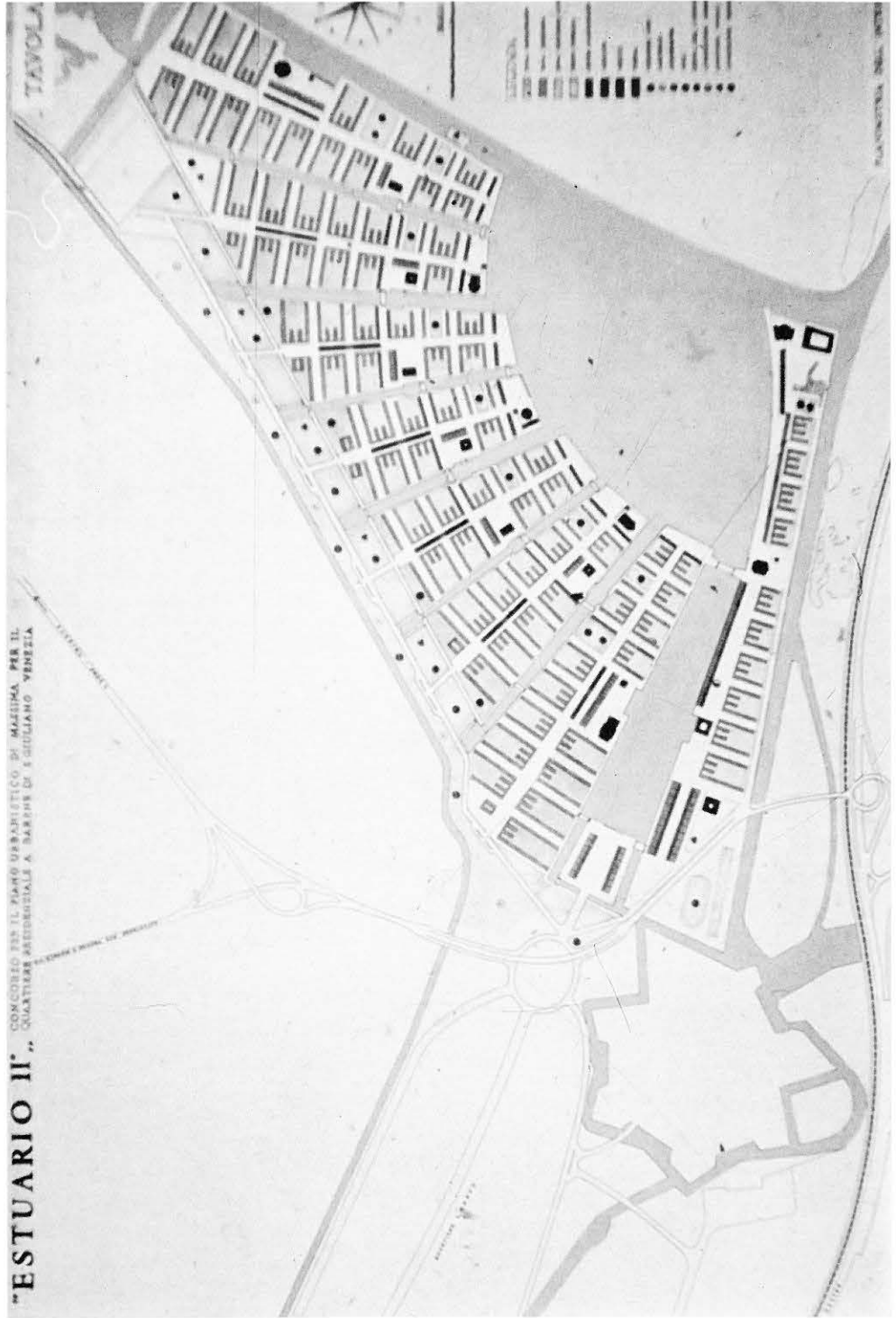




*The urban fabric of Venice  
(from Studi per una Operante  
Storia Urbana di Venezia by  
Saverio Muratori. )*



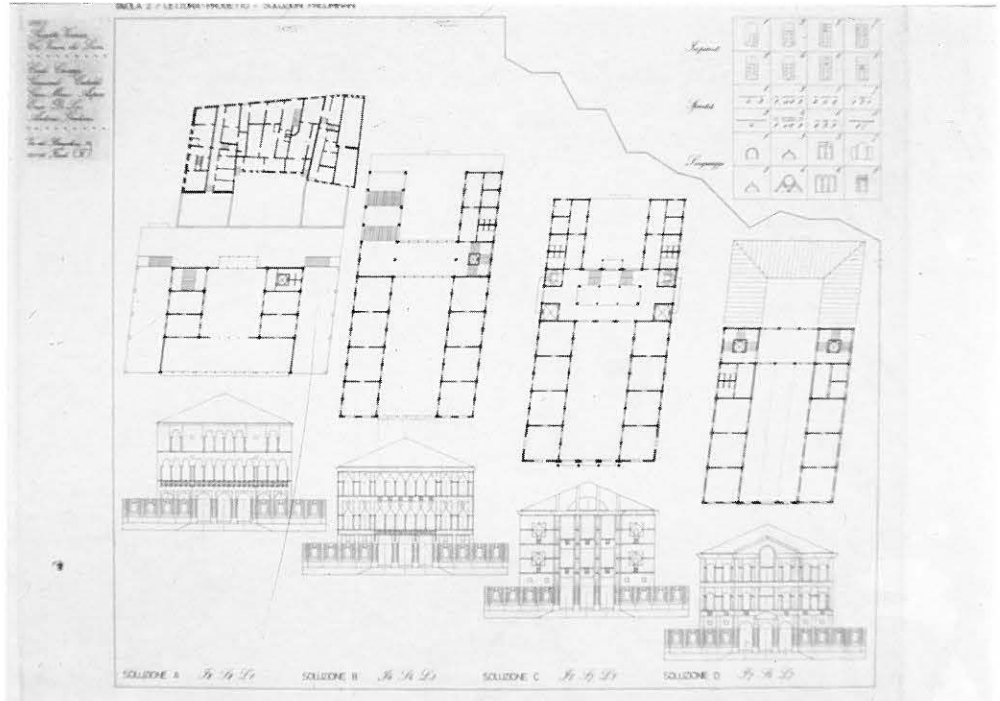
Competition for the residential quarter at Barene of San Giuliano in Venice. Project Estuario (first) by Saverio Muratori.



Competition for the residential quarter at Barene of San Giuliano in Venice. Project Estuario (second) by Saverio Muratori.

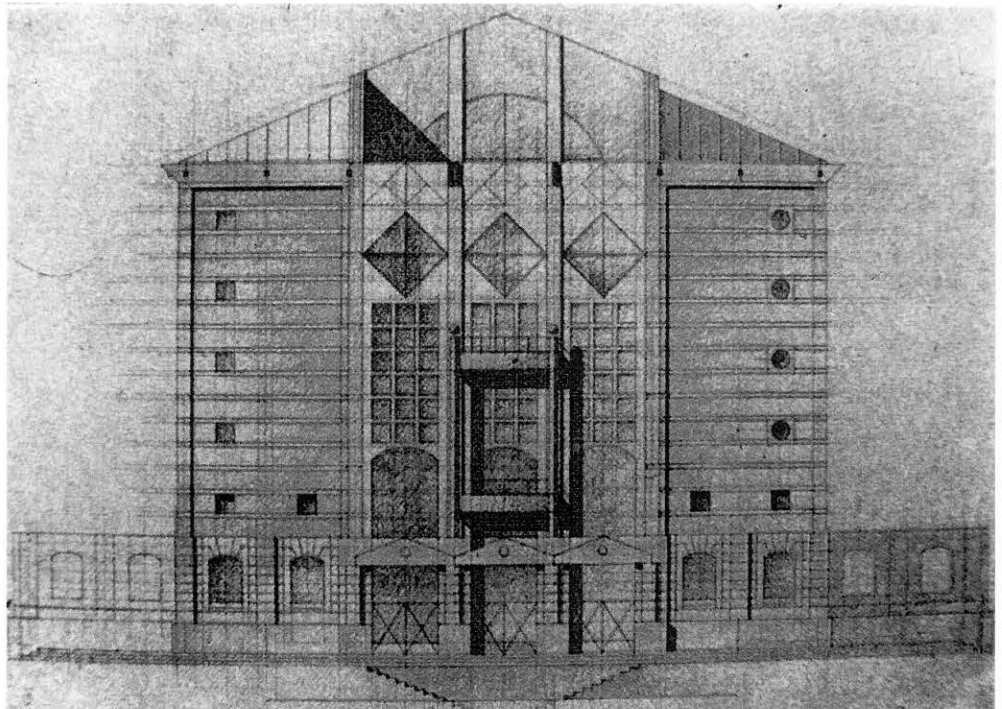


Competition for the residential quarter at Barene of San Giuliano in Venice. Project Estuario (third) by Saverio Muratori.



Competition for the completion of the Palazzo Guggenheim in Venice by Giancarlo Cataldi and others. Typological table.

Competition for the completion of the Palazzo Guggenheim in Venice by Giancarlo Cataldi and others. Elevation.





extraordinary continuity and its stylistic and building homogeneity, is at the root of the international success of the "Progetto Venezia," a competition held at the Biennale in 1985, twenty-five years after the Sandbank exhibition. The architectural climate had in the meantime changed radically and the fortunes of new trends were enhanced by Venice's everlasting attraction and its most prestigious cultural institution. We must give credit to its chairman that he saw the change coming, even though he had been one of Muratori's greatest detractors in the sixties. Paolo Portoghesi wrote in his introduction to the catalogue:

As for the "new familiarity" with the heritage of the past, whether recent or remote, this exhibition shows that it is no longer a question of a critical hypothesis, but of a solid, stable body of information with which future generations must also come to terms unless they want to remain imprisoned in their false distraction. It is equally obvious that this revival did not cancel the heritage of what was "modern". It did not break off any young shoots; if anything, it provided a mirror, and therefore a formidable tool for self-criticism: the worn out, exhausting, and confused issue of the decline of modernity.

This was a design opportunity for our school that was not to be missed, especially given the prominence on the international scene of the exhibition, which seemed to guarantee that choosing from among the various designs would provide an opportunity for throwing them open to critical debate. Unfortunately, this did not happen, partly because of the large number of participants and partly because of the heterogeneous composition of the jury, which virtually made no choice in order to leave no one out.

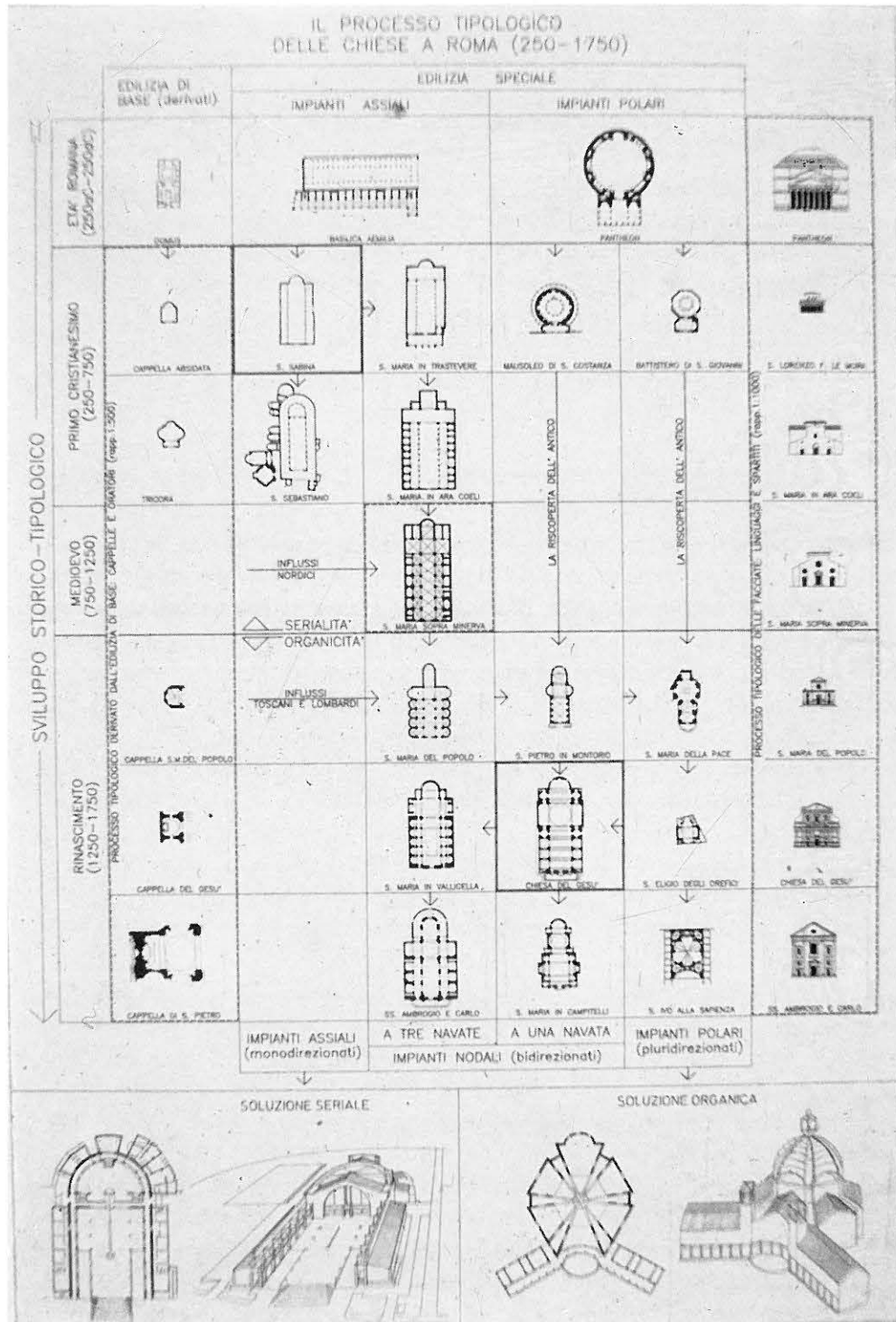
Here I will take the opportunity to present the design for Ca' Venier dei Leoni in its entirety, as it was put together in Florence by Carlo Chiappi and myself with some of our colleagues. In the hotch-potch of proposals and drawings displayed, we did not have the space to show our design in all its stages, which referred explicitly to Muratori's Sandbank model.

The aim of the exhibition forced us to tackle the subject—the completion on the Canal Grande of a late-seventeenth-century palace, now a museum of modern art—from an essentially methodological point of view. Its contents were already expressed in a sentence pronounced by the great architectural historian, Guglielmo De Angelis D'Ossat: "Venetian architecture has always refused to invent or transfer unconventional designs to the lagoon."

In our report we listed four principles of reference, using four appropriate quotations:

1. Towns are history: "The reality of a town lies in its characteristic individuality which is only completely revealed in its form which has been molded to its natural environment by historical events, on intentional and practical grounds, and by various psychological and spiritual values. In brief, towns sum up the basic historic facts of a

IL PROCESSO TIPOLOGICO DELLE CHIESE A ROMA (250-1750)



Competition for the construction of Fifty churches in Rome by Cataldi and others. The typological process of the church.

civilization and develop them" (S. Muratori, 1950).

2. History is continuity: "The art of building arises from some pre-existing germ. An antecedent is always necessary: nothing comes from nothing, and this can only be applied to all inventions of mankind" (A. C. Quatremère de Quincy, 1832).

3. Discontinuity is crisis: "Modern architecture cannot be subjected to any law of historic continuity. In modern times the process of consecutive stylistic development in architecture has ceased. Architecture has broken away from tradition; it has to start over again from scratch" (A. Sant'Elia, 1914).

4. Continuity is working reading: "One can do anything but invent new things: real invention lies in not inventing anything" (S. Muratori, 1971).

The six tables presented at the competition were divided up into three sections: the first summed up the results of typological research on Venetian palaces; the second, passing from research to design, developed the design hypotheses in stages, and the third examined the solution considered to be most suitable by the board.

The results of the typological reading were basically in agreement with the results of the studies of Paolo Maretto and Gianfranco Caniggia, published in 1986 in the volume, *La casa veneziana nella storia della città*. The first figure schematically documented the most important changes that Venetian palaces had undergone over time, mainly in terms of major typological variants, planimetric systems, facade divisions, and architectural languages.

Design indications originated from them, including first and foremost the concept of a courtyard, which in a lagoon setting constantly tends towards tripartition, with a long warehouse, joining the *rio* to the *calle* on the ground floor, corresponding on the first floor to the *sala passante* with its side rooms. In Venice, this explains the reinforcement on the facade of the central vane, with that characteristic effect of lightness and transparency, which is due more to the special technical needs that lagoons impose—pole foundations and the uniform distribution of the horizontal loads of floors on transverse boundary walls—than to typological and stylistic factors. Another interesting piece of information in the typological reading is the resistance of the oldest palaces to changes in plan, which are far less frequent and noticeable than changes in the divisions and stylistic elements of the facade, unless the entire building has been renovated, as was often the case in palaces of the Renaissance and Baroque periods. In these cases, design unity tends to make the structure, function, and readability correspond, leading to vertical alignment in the table.

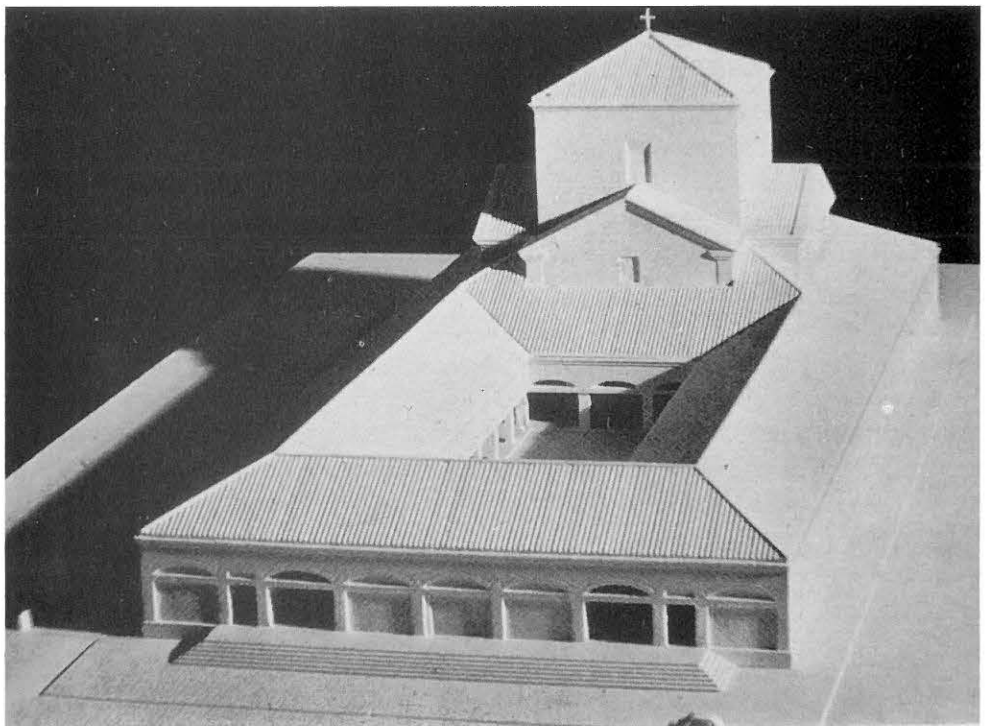
From the reading of the development of Venetian palaces, we then passed on to the four successive design stages. By comparing them in terms of the three aforementioned typological variants (summed up in the table), we then made the choice of the final design.

Let us try to describe the salient aspects of these passages. The main

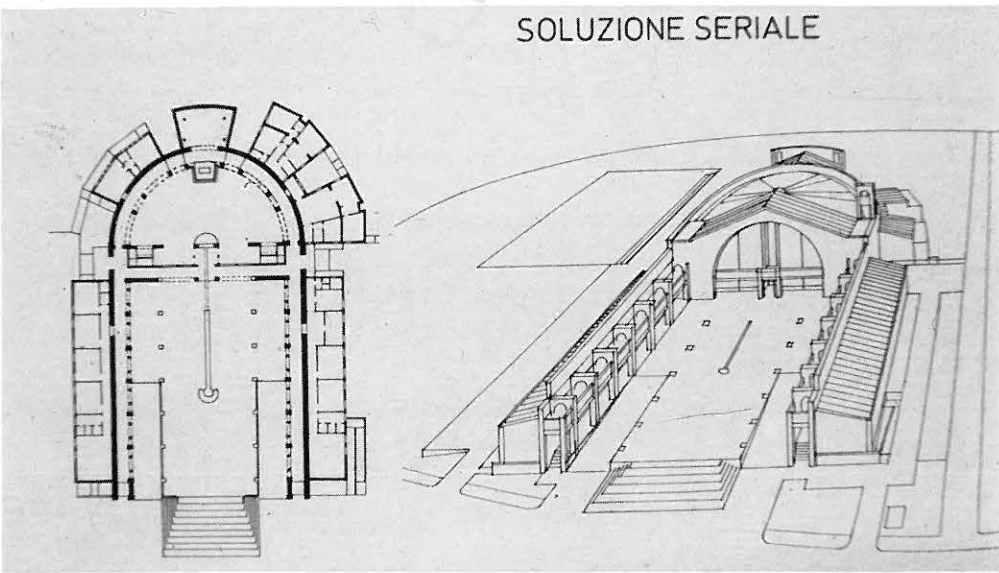


*The church in Tuscolano  
Quarter designed by Saverio  
Muratori. Model.*

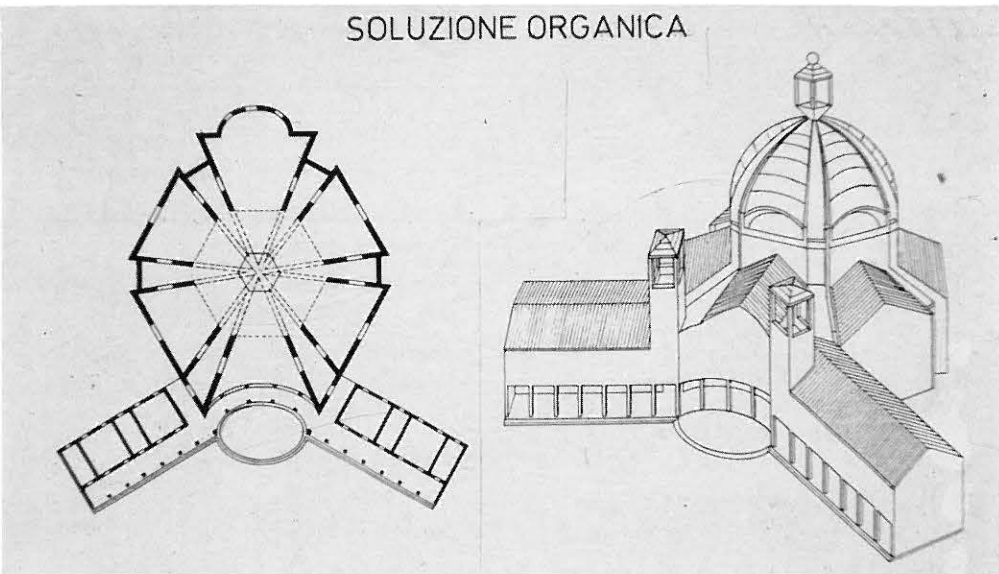
*First competition for the  
churches of Rome. Model.*



SOLUZIONE SERIALE



SOLUZIONE ORGANICA



Competition for the construction of Fifty churches in Rome by Cataldi and others. Above - Serial solution. Below - Organic solution.



characteristic of Venetian palaces, tripartition, occurs in each solution, conditioned by the alignment of the pre-existing base. Planimetrically they vary in the different configuration of the rear area. In the first case, we kept the detailed building at the back, keeping the T-inversion of the *sala passante* on the front to obtain on the facade a series of arches on the piano nobile. The second case is distinguished by the typical flight of stairs providing access to the remaining courtyard which tends, in the other two stages, towards a progressive architectural definition on all four sides.

If, generally speaking, the correspondence between the division and planimetric system is a problem that can almost always be solved in terms of rationality and consistency, the same cannot be said for architectural language due to the intrinsic variability and subjectivity of individual choices, especially nowadays in the absence of an established formula. In our case we tried to see what the typical modern Venetian forms were and whether they could coexist with certain renovations, hoping to be able to enrich the traditional linguistic heritage, which is easy in theory but difficult in practice.

The third solution was chosen in this sense. The mature in-between stage provided greater guarantees of adaptation to the scale and history of the town, especially with regard to the gigantism that undermined seventeenth-century design, bringing any further chance of typological development of Venetian palaces to a halt.

Planimetric clarity had to be matched by equally clear formal readability in the sections and in the perspectives of the solution selected. Years later, I can see in this solution a lack of balance between the empty space in the central area and the fullness of the side bodies, characterized by the two-tone wall bands.

The conclusive planimetry shows the extent to which the new building fits in with its environment; it tends to complete the *palazzata* on the Canal Grande and, with its size, to balance the monument of the Corner palace in front of it.

The third design was for the “50 churches for Rome in 2000” competition. This competition, announced last year with great pomp and ceremony by the Diocese of Rome, was intended to relaunch and promote the building of churches on the outskirts of the city for the next Jubilee.

In this case, as in the previous two, the results were not up to initial expectations, stirring up discontent among the participants; however, it is pointless to dwell on that. What should be said is that the typological content implied in the title of the competition showed a desire on the part of the ecclesiastical hierarchy to aim not only at the two designs explicitly requested, for Tor Tre Teste and Acilia, but to encourage all architects worldwide to seize this opportunity to conceive a new type of church for use in the future—as churches had been in the past in Roman history—as a model of reference.

But if, as the saying goes, "the road to hell is paved with good intentions," it would appear in this case that "the devil interfered," since meritorious design trends seem to have moved in the opposite direction, partly owing to the competition organization itself, which once again reflected the widespread concept of architecture in terms of purely formal invention, compounded, in the case of a design for a place of worship, by a misunderstood sense of "freedom of expression," often mystically falsified as spirituality and religious sentiment.

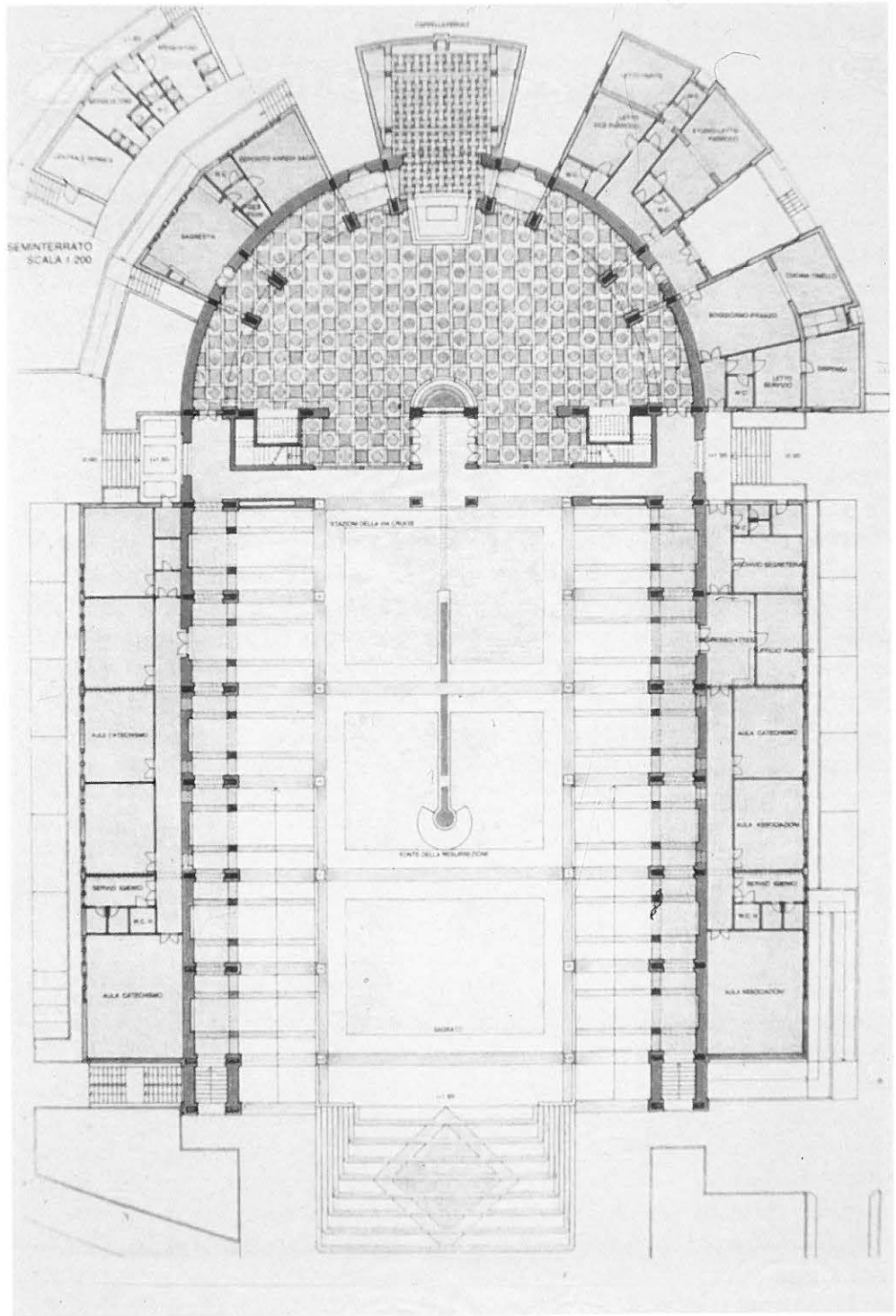
The typological assumptions of the competition urged us to participate as a team from our school, formed by Muratori's closest assistants, Renato and Sergio Bollati and Guido Marinucci, who had worked with him on various occasions (in the Sandbank Competition in Venice, and in the first Roman Churches Competition, in 1966), together with myself, Enrico Lavagnino, and some other young architects. We could count on considerable knowledge of the city since the members of Muratori's historic team were co-authors with the Maestro of the *Studi per una operante storia urbana di Roma* atlas. This, together with a guide, *Le cento meraviglie di Roma*, provided an abundance of documentation and served as the basis for our reading.

In tackling the design, we had to keep two problems in mind: one was the shabbiness of the outskirts in which we had to work; the other, the lack of references owing to the break in the typological development of churches. This led to a series of questions: how could we pick up where we left off? What were we to do: were we to go back to the very source of designs to try to restart the process under the same evolutionary conditions between the new unit and its surrounding fabric? Or were we to follow Muratori's example in the Tuscolano church and refer to more mature models on the assumption that the built environment would sooner or later manage to adapt to the new church?

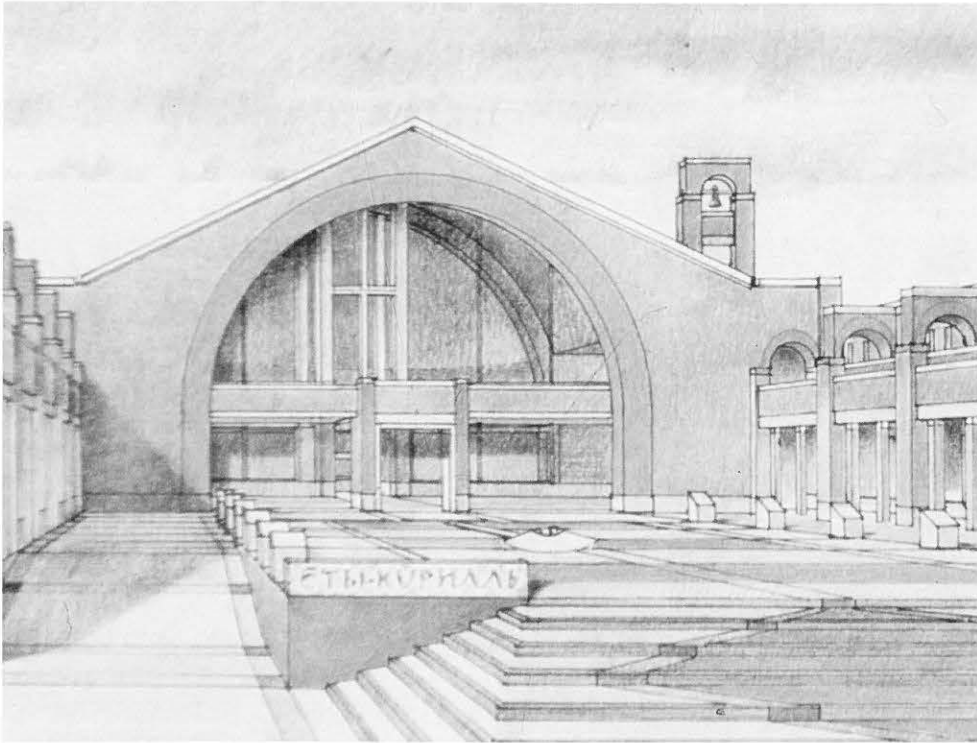
To solve the dilemma, once again we used the reconstructive reading of the typological process, which in the case of churches manifests itself with characteristics peculiar to Rome and an abundance of examples, especially from early Christianity and the Renaissance.

In the beginning, the new typologies for the various church functions (chapel, basilica, baptistery, and mausoleum) clearly showed that they originated from the established forms of the Roman world (domus, basilica, and vaulted circular halls), with the exception of temples.

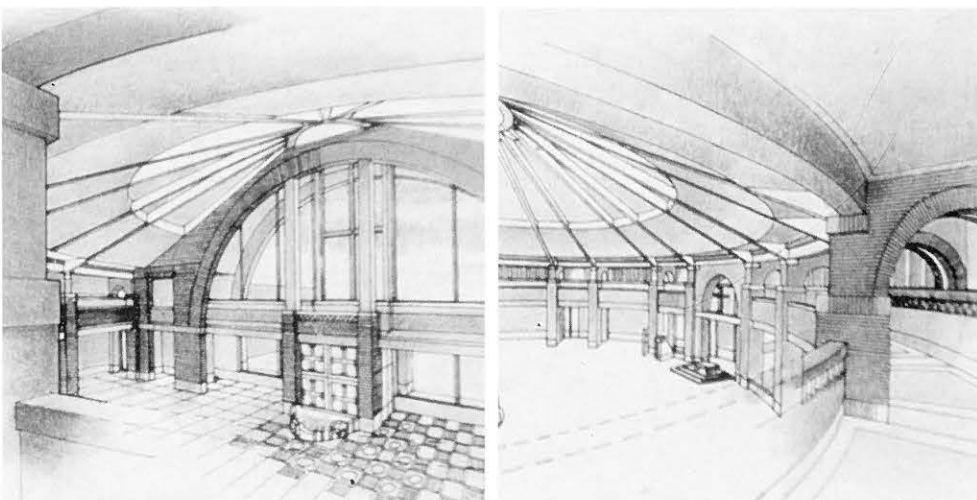
It was only after the period of decline that culminated in the Avignon papacy, with the unfurling of the new papal designs for the replanning of towns, that churches came back into prominence in Rome. Beginning in the late fifteenth century the best Italian architects, accompanied by an effort to express themselves in the classical language, completed a radical transformation of the traditional Latin-cross plan, the most widely diffused in Europe after 1000, though virtually nonexistent in Rome owing to the local continuation in an updated version of the basilica, with chapels and a



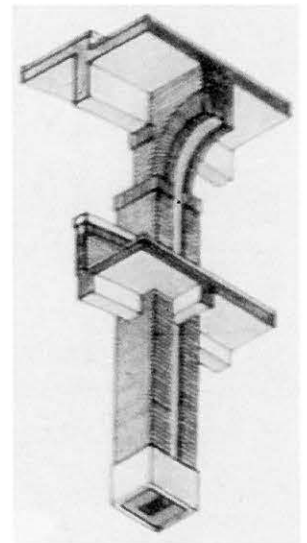
Competition for the construction of Fifty churches in Rome by Cataldi and others. Plan.



*Competition for the construction of Fifty churches in Rome by Cataldi and others. External views.*



*Competition for the construction of Fifty churches in Rome by Cataldi and others. Internal views and construction details.*



presbyterium (e.g., S. Maria in Aracoeli). In fact, the only Gothic example, S. Maria sopra Minerva, was progressively transformed through the influence of other Italian regions, until it settled into a new canonical version of the church of Jesus, forming a sort of genial mediation between the liturgical needs of the clergy and the architect's design intentions, which were inclined to opt for the unitary theme of a large central hall. The building of St. Peter's is exemplary in certain ways. The waning of the Renaissance coincided with spiritual crisis as the modern age began; its repercussions were particularly harmful to the planning of churches, which vacillated between structuralism and individualistic formalism.

Today no one can solve such a complex problem as finding a new type of church for the third millennium. But if history is meaningful and if it is legitimate—as we maintain it is—the design responses provided by the process can only attempt to refer to its two extreme points.

One solution, commonly defined as “organic”, once again experimented with the unitary central plan in order to pick up where they left off in Baroque churches at the last great stage of Roman architecture. This attempt was clearly inspired by Muratori's design of the church of Tuscolano, whose hexagonal plan, with its alternately sliced dome and clerestory, enabled us to fit the new complex geometrically into the particular urbanistic conformation of the Tor Tre Teste area.

The second solution, and the one chosen, commonly defined as “serial”, was intended to opening up a new process cycle, as it could count on the more favorable environmental relationship of the heterogeneous buildings in Acilia, where it was to be built. It was characterized by the following elements:

1. The inbetween horse-shoe carrying wall against which to build on one side the various places of worship and facilities and, on the other, an open-galleried portico linking it horizontally to be constructed internally. It is a plan that clearly alludes to the early medieval re-utilization of ancient ruins.
2. The square for worship in the open, between the church and its wings. This element can be taken as an up-dating of the Paleo-Christian “paradise”, from which it differs by having a missing side, psychologically aimed at making the church fit better into its surrounding district.
3. Its axial plan in a single direction concluded by the semi-circular space of the church, whose vertical pivot is the highest structure, symbolically alluding to the bond between the ecclesiastic community and God.
4. The secondary premises with liturgical, administrative, teaching, and residential functions, located around the perimeter and joined together at various levels by horizontal links.

The typological reference to early Christian extramural cemetery basilicas demonstrated the possibility of refounding religious citadels capable of



reaggregating in their building nuclei the sprawl of the modern city. His design naturally was not intended to be a replica of earlier versions, but a revival of the process, capable of recovering and updating church elements that are still topical in the long history of Roman churches.

To conclude, the anomalous design procedures that have been shown to you aim not so much at the venustas of a certain architectural solution as at experimenting with the possibility that a typological reading can be taken as the disciplinary foundation of architecture.



Attilio Petruccioli

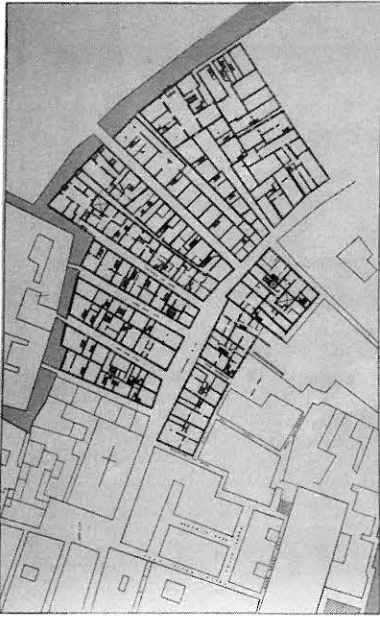
## Alice's Dilemma

*Contemporary architecture, in the most general sense of an art after modernism, seems increasingly to be caught in the dilemma of Alice playing Croquet with the Queen: she knew what the game was called, but there did not seem to be any fixed rules, and, to complicate matters, the equipment, was in continuous and random movement, from the flamingo-mallets to the hedgehog-balls and the soldier hoops.*

Anthony Vidler

In *Mein Kampf* Adolf Hitler almost carries on a discourse by putting himself in the position first of a modern and then of a nonmodern — modernity he identifies with technology in the service of war, that is, with its destructive power. Modern or nonmodern—for nearly half a century architects have been asking themselves this same question, identifying it with their being in the world. The ideological use of the word “modern” is more than two centuries old, but it still has no clear resolution. More immediate for us is the abuse of this term between the two world wars; then it was used mainly to establish a line of separation that would exclude those who did not accept the language of machinery, but instead persisted in following their own personal alternative itinerary. The Modern Movement can be metaphorically regarded as a mid-summer night’s dream (the best moments of the dream being the concrete realization of a serious social program), from which architects awoke to find themselves playing croquet with Alice, just as Anthony Vidler points out.

To the postwar period belong the activities and thoughts of Saverio Muratori, an Italian architect until now unknown in the United States.<sup>1</sup> Since the theme of this publication is the relationship between readings and design projects, Muratori is a key figure, both as an example of a practitioner who attempted to rethink the fundamentals of the Modern Movement and for his theoretical contributions to this rethinking process. In the first part of this paper, I will discuss some of the key principles extrapolated from Muratori’s thesaurus, his complex body of thinking based on a solid philosophical foundation: the concept of crisis, the process of self-awareness, the concept of operational history, and the idea of an a-priori type. In the second part, I will try to elaborate on the possible applications of these principles and ideas in the two related disciplines of building restoration and urban preservation.

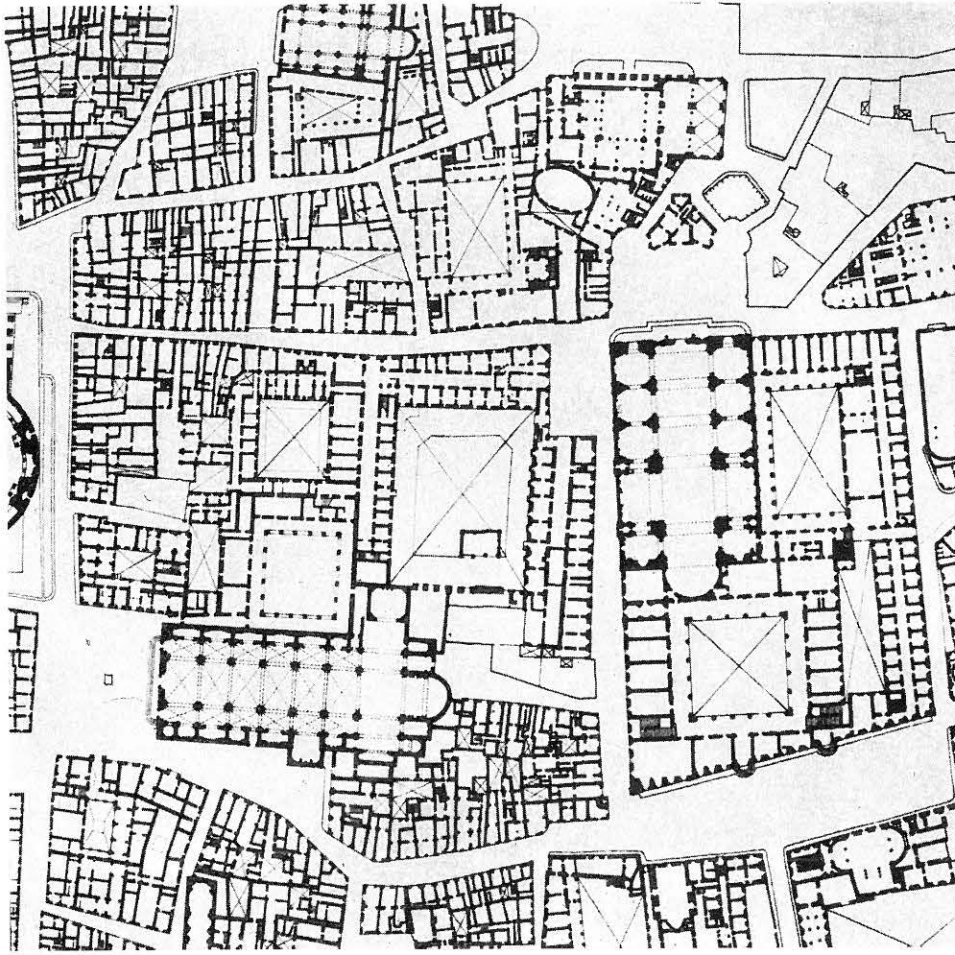


Venice.  
 Architectural  
 Survey of the fabric  
 of S. Lio (From *Per  
 una operante  
 storia urbana di  
 Venezia, op. cit.*)

## Crisis as a Typical Moment in the Civic Process

In the 1950s all of the most prominent architects were questioning the outcome of Modernity. Some took a detour to vernacular forms as a result of their musings; others concentrated on abstract technology; still others began looking at romantic empiricism. Muratori remained the only one who was interested in building a rigorous method of design that was also transmissible and neither individualistic nor self-related. I am reluctant to use the term "crisis," which Muratori adopted in his book, *Architettura e Civiltà in crisi*,<sup>2</sup> because it echoes the apocalyptic tone of writers such as Huizinga and Spengler, though Muratori was in their debt<sup>3</sup> in their description of Western civilization as being on a trajectory towards progressive crisis. From Huizinga in particular Muratori also derived a millenarian tone that gives a wrong impression of pessimism. In reality, he always opposed the *pars destruens* in this book with a *pars construens*, since his aim, within his perspective as an architect, was to find solid foundations for a new way of design. If we ignore the pessimistic connotations of the word, "crisis" includes some idea of uneasiness.<sup>4</sup> Essentially, it is equivalent to the uneasiness engendered by the works in progress.

The causes of the crisis still in place in the Western world today go back to the eighteenth century, when the forces of reason broke the universal vision of the Renaissance. Of the many causes, I would point to only one because it is intrinsic to architectural activity and directly impinges on our day-to-day acts. The "aulic" or ceremonial language of architecture was transferred to "minor architecture" and the consequence is that current (minor) buildings aspire to exceptional treatment — more and more often we find students who design common dwellings like Calatrava's bridges.<sup>5</sup> This is not to say that Calatrava does not have the right to conceive and build his beautiful structures, that strip of *materia* proceeding towards the top, as in the Gothic cathedral of Seville. Neither do I want to deny the possibility that any architect might represent the collectivity in a monumental work. On the contrary, I feel the monumental is vital in a society that is losing its collective memory. The problem is in the pale urban contexts, the suburban fringes, in which the modern monument is located. The isolated poetical gesture cannot compensate for a squalid built environment, nor is it possible to design an urban fabric composed solely of exceptional sculptural objects. Crisis, then, is an acknowledgment of the uneasiness created by any change, which, like works in progress, announces a better future. Starting from the awareness of the crisis, the conscience can begin a process of learning about built reality during which the subject progresses critically. The point where one ends this process of maturation Muratori calls self-awareness, because it is not extrinsic but intrinsic to the subject. To the now-lost spontaneous awareness, unitarian and synthetic, typical of the classical tradition, Muratori opposes the need for a reflective awareness that can help the architect to



Rome:  
*Architectural  
Survey of the fabric  
between Piazza della  
Minerva e Piazza  
del Collegio Romano  
(From Per una  
operante storia  
urbana di Roma,  
op. cit.)*

rediscover what his conscience has lost but what is still preserved in the historic city.<sup>6</sup> Therefore the process is intrinsic but also dialectical because it requires an object — the built reality of the historic city. For him this form of knowledge is only possible today because it is asymptotic — from the famous curve it proceeds tangentially to the segment without reaching it, but when it gets close enough, the process changes from reflective to self-aware.

Muratori's teaching in the School of Architecture in Venice came at a critical moment. Being there he understood that the application of self-awareness lay more in the urban fabric than in the monuments, because it is the depository of all human action and preserves the highest cultural and civic meanings. In fact without an understanding of the building tissue and urban fabric the history of urbanism is only a technical, generic, and abstract history of successive zonings, open spaces, and monuments — a history from which the individual is exiled.

The architectural patrimony which Muratori discovered in the *sestieri* of Venice and to which he applied all his logical tools is not only a collection of forms, spaces, and aggregations but also a history. Following the Italian



philosopher Benedetto Croce, who in his book on logic<sup>7</sup> dedicated a full chapter to the logical unity of history and philosophy, Muratori believed in the coincidence of the process of knowledge and the process of history: "There is no knowledge of real phenomena outside history."<sup>8</sup>

Muratori's logical tools belong to Italian post-idealistic philosophy, not only Hegel, but Croce and G. Gentile. This has two important consequences: his discourse cannot ride on the dualism of subject/object, and he implicitly accepts the Crocian *Teoria dei distinti*,<sup>9</sup> according to which the appropriation of reality by the subject proceeds by steps, using four categories of the spirit (*distinti*), aesthetics, economy, ethics and logic, in that order. Croce considered the most rational logic and the most intuitive aesthetics, and proposed that the romantic equivalent of the work of art was an individual product, and therefore arbitrary. This was not acceptable to Muratori, who pursued the artistic value of the collective fabric and the city. He therefore reversed the order — the first becomes the last — and in this way restored the work of art to its place as the highest product of the spirit that can neither be separated from rationality (logic) nor be a product of the individual, but represents man realized in his society.

### History as Design and Design as History

If *verum* and *factum*, real and action, as stated by Gianbattista Vico, coincide, not only is history the place where architecture should be sought, where *verum*, because it is real is also true, and where it will allow a firm link between the built reality and the activity of design. The condition is that history should be neither descriptive nor abstract, but operational and concrete: "History nowadays acts as determined action, as project, valid within the given boundaries of the means employed. . . . History therefore proceeds as a project of reconstructing the process that yesterday determined events."<sup>10</sup> This reconstructive process which attempts to allow historical and design attitudes goes through four moments or phases: first, history as a reconstruction of the built landscape or as a palimpsest — as a superimposition of several tissues, each one representing an age considered in its autonomy; second, history as a reconstruction of the built reality of an age, as an essential component of the preceding tissue which acts as a conditioning factor, as permanence in the new system; third, history as a reconstruction of the fabric as a unitary process, controlled by a cyclic law (the present is a moment in that cycle); fourth, history as a reconstruction of a compartmentalized set of rules that continuously produces individuality through exceptions and variations. For Muratori, therefore, "the production of a continuously renovating individuality as a realization of a constant law, as an increment of the law itself, will overcome the crisis."<sup>11</sup> The freedom of the project is preserved but is also contained within the limits of the increment of the law.

## Operational History as a Solution to the Crisis

The book *Per una operate storia urbana di Roma* ends on an optimistic note. Operational history closes the period of cultural waste, of the search for extravagant novelty that has created the present crisis, and opens a new era in which the cultural patrimony of man is protected. This means that resources are available for new cultural investments on condition that the basics are conserved. "It means that culture, science, politics and therefore administration, planning, urbanism, and building should change radically, putting in first place a conservative conscience instead of a pure experimentalist and episodic *praxis*. New instruments are required."<sup>12</sup>

After 1965 Muratori gave up architecture, and devoted the last part of his intellectual life more and more to the study of the history of civilization. He also became aware that his project would take so long and was so full of contradictions that he would never complete his intellectual journey. Thirty years after his death, we are still questioning the validity of his philosophical construction. Muratori certainly remains a solid philosopher, and I am unable to decide whether his thought should be placed exclusively in the history of ideas or be regarded as part of actuality as well. Certainly actual is the ethical value of his message and the generic principles on which his choices are based.

The central mode of Muratori's thinking is, however, the journey of the mind to appropriate reality. This theory, from Hegel's phenomenology of the spirit onwards is based on the two entities of subject and object and the process of four moments that ends with the creation of the work of art, a new object of reality that keeps the system moving. The interpretation of man in the world is global because the four moments cannot be read separately, but only all together and following a given order. This gives him a method which is a powerful intellectual machine, able to catalogue and evaluate objects in their function of conservation or design.

Let us now imagine that the reality exists in itself (being) and becomes significant only through judgment, which is implicitly against the idealistic principle of the identification of the subject, thinking, and the object, thought. In this case the subject appropriates, not reality, but the sum of the judgments that have already been performed in the mind. If thinking and reality, to use an image of Muratori and proposed again by A. Giannini, are like cast and casting, contiguous and complementary<sup>13</sup> at the level of the invention, we do not have an automatic application of Muratori's body of principles found in the historical process, but uncertainty. This does not mean bringing up again the principle of operational history, custodian of knowledge, but a wider separation between the process of reading and the process of design that requires a superior reflective attitude by the operator.

## Type

To carry out a rigorous reading of the built landscape, a serious premise in any case for design that is to be far from the vicissitudes of fashion, it is necessary to become aware of the constant law that is typology or the typicality of buildings and urban phenomena. This awareness is the nodal point of Muratori's discourse; he intuitively understood the a-priori character of type. For him type is not the distillation of a sequence of examples, as it is in a positivistic science useful for taxonomy, but a synthesis a-priori, a mental construct that anticipates any event.<sup>14</sup> Elsewhere in this volume Cataldi discusses this idea, so I will limit myself to just one example. In a traditional village the peasant and the mason and all the inhabitants have a clear idea of what a house should be like and how it should be built. The houses of a certain limited cultural area in a given time were all similar in character but different in detail, and people, like Adolf Loos's carpenter, used to make their houses without much thought.<sup>15</sup>

In a period of crisis, when spontaneous awareness is fragmented and people do not know what they want, the a-priori type vanishes, and the only recourse available is to reconstruct it by means of reflective awareness, that is, a posteriori. If type is history, I think I can correctly interpret Muratori's thought by underlying the processional value of type, the dynamic factors continuously accommodating to the needs of the society. On the typological process a debate is in the making to which I have dedicated many pages in my last book. Here I will limit myself to noting only those points that are essential to developing the last part of the discourse.

Typological process is a concept that acknowledges the progress of type and regards a critical knowledge of the urban palimpsest to be a scientific instrument for formulating answers to questions of context.

## Typological Process

Typological process is the reconstruction of the changes a type has undergone through time in significant intervals that are called phases. Phase is defined as a reasonable distance in time that allows a distinction of consistent differences between two consecutive types to form. A type that is an expression of all society in a given moment is called a leading type, since it is the ideal to which everyone refers when building a house. The individuality that Muratori speaks about is always around the corner, represented by all the exceptions that are realized under less optimal conditions or synchronic variations. These conditions could be caused by topographical problems or problems with placement in a block or in an incongruous tissue. The typological process is as complicated as the urban organism in which it operates, and it involves the intersection of various processes.

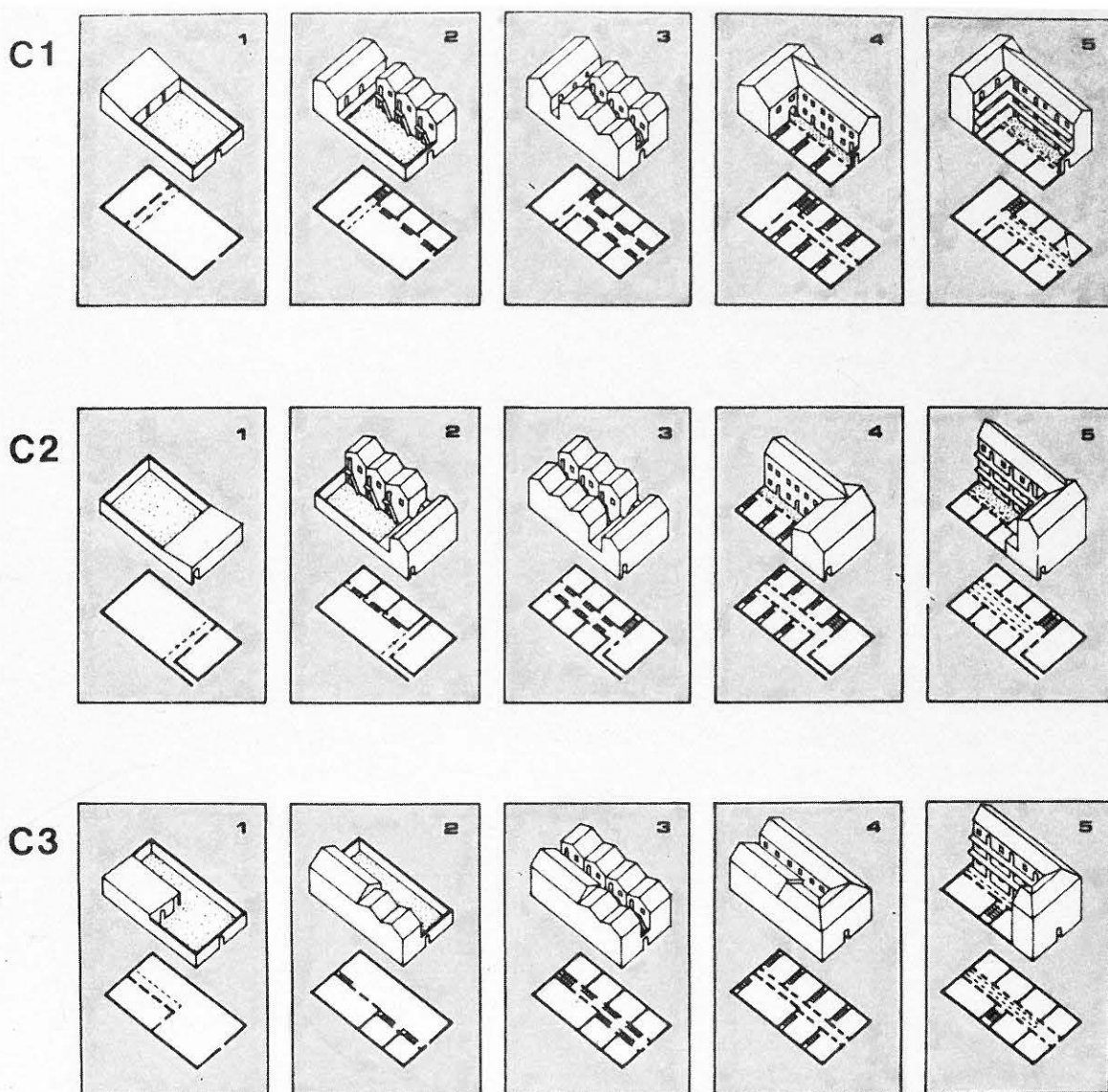
Here it is necessary to introduce the distinction between residential and special buildings. The latter are buildings whose principal function is not a dwelling — a mosque, a convent, or even a Renaissance palace. That the special building is derived from the house is commonly accepted; it occurs by a process of progressive specialization of its parts. It is therefore always possible to imagine a new process that generates a special building that branches off from the principal one. The Roman Renaissance palace, for example, represents an interesting synthesis between a real process and another that could be called virtual or intellectual process. From one side it results from a fusion of row houses and their progressive disposal in the depth of the block around a central space; from the other, it comes from the rediscovery and reinterpretation of the classical atrium house, based not on archaeological evidence but on the philological reading of Vitruvius's text by humanists like Daniele Barbaro and Fra' Giocondo. In the typological process that the Roman house underwent in the fourteenth century, therefore, a new line branches off from the principal one and takes an autonomous route.

The typological process of the residence is diachronic by definition and synoptic in general because the type/house is deeply rooted in the society, and in principle does not travel easily.<sup>16</sup> For special types, on the other hand, one has to expect the possibility of an exchange between different cultural areas and therefore other diatopic processes and related weaves.

Let us consider Rome and its residential process as it can be reconstructed from the medieval period onward. In the eleventh century, for instance, the leading type is very close to the elementary cell, consisting of one single room, generally 17 feet x 17 feet, situated among similarly modular tissues codified ad hoc.<sup>17</sup> The leading type was modified in existing houses, however, on irregular lots or on slopes, or at the beginning of a series, or on a corner, and so on. The sum of these variations generated a parallel process by synchronic variation; each could result in imitation by a neighbor, offering itself as a possible solution to some problem. In time these parallel processes contribute to the modification of the leading type as they gain in maturity and experience.

In a second phase, assuring the continuous growth of the city, the next leading type will evolve by exceeding its limits and refining some of its parts, as happened, for example in Rome in the fourteenth century after the return of the papacy from Avignon.

As a city grows, two important general developments take place: in new growth zones the new leading type coherently adapts to the tissues planned specifically for it; it is mainly found along principal or matrix routes or planned routes. In the historic city centers where the layout is more permanent because of the physical resistance of the tissues, the inhabitants must compromise between the concept of the leading type and the reality that the tissue is unyielding. Their intervention will determine two new possible types of synchronic variants: (1) renovation or mutation of the



*Reconstruction of the insula process of the courtyard house (from the author)*

disposable elements of the interior without disturbing the main structure; and (2) demolition and reconstruction. In the medieval quarters in the loop of the Tiber in Rome, a slow process occurs in the row houses that generates a division of the houses in horizontal layers, each one accommodating a reduced apartment. The position of the staircase changes in a way that is conducive to greater privacy (in the beginning the landing was in the main room of each private apartment); this long process ends in a solution of double ramps in separate sites between two loadbearing transverse walls. This process is the premise to the new leading type obtained by fusing more rows and disposing apartments horizontally.<sup>18</sup> The type *in linea* was born in the fifteenth century and is still the main reference nowadays for the European tradition of dwelling.

The assumption that the growth of a city is steady is false. In reality after a

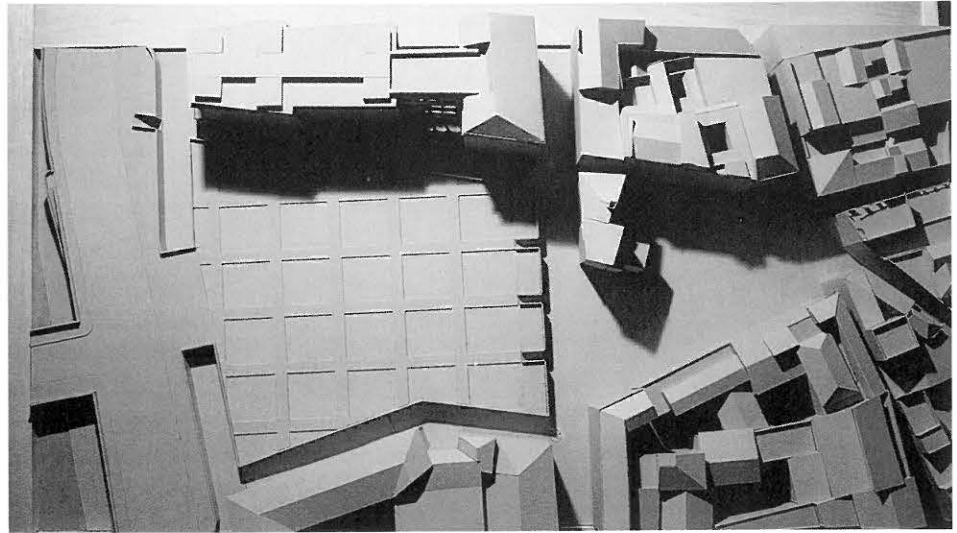


certain number of growth phases a period of relative stagnation, or even of regression, sets in, resulting often in vacancies, abandonment, and the like. This in fact happened in all Mediterranean cities after the plague almost halved their populations in 1334. Siena is an excellent example of the lack of urban development over a long period of time; well into the midnineteenth century large undeveloped areas still lay within its city walls.

A more realistic picture is one in which intervals of more or less intense growth alternate with periods of arrested development. During the periods of accelerated growth and subsequent slowing down, the behavior of residential tissue and special tissue is different. The residential tissues easily both accept rapid growth and resist regression. The period of regression affects first and foremost the special buildings, because they represent the investment of the cultural and economic surplus of the collective. In periods of economic stagnation, limited building activity inhibits the evolution of a leading type. In the case of shrinking tissues there is a parallel reduction in the specialization of the residential type, as its former incarnations produce only synchronic variations.

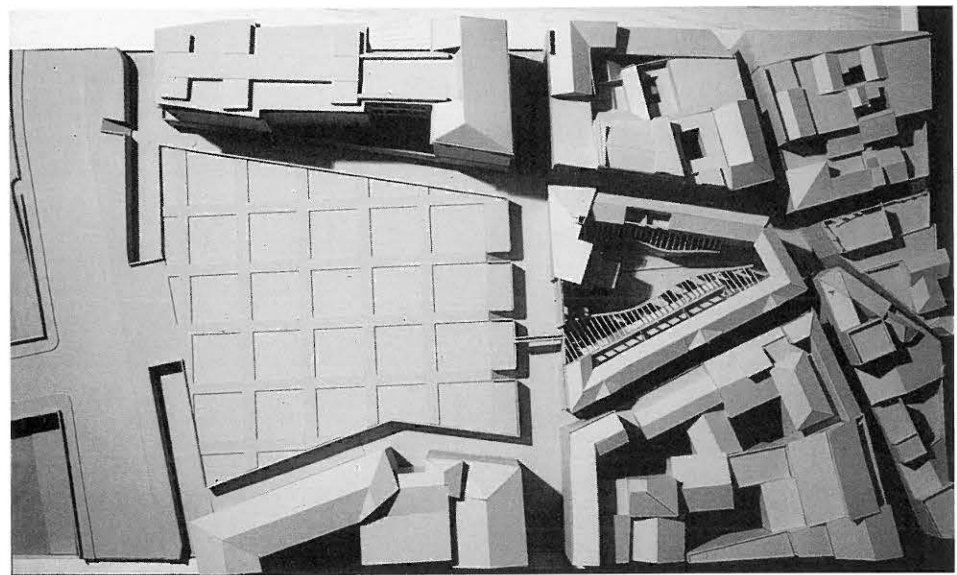
When a period of stagnation gives way to a new cycle of growth the following phenomenon occurs: as the notion of a leading type has become considerably attenuated in the spontaneous conscience of the residents, they are only able to manage synchronic variations. As a result, diatopic<sup>19</sup> variations thrive on the weakened body of the city. Under those circumstances, the leading type is then often imported from a distant but culturally dominant area. The new leading type that results from the synthesis of parallel local processes and the imported type is then used in the new expansion of the city. This again can be seen in Rome where after 1850 the leading type was imported from outside, from Paris and Vienna, and strong processes of local synchronic variants determined the formation of a new leading type of bourgeois apartment house with specific local characteristics.<sup>20</sup> The Roman leading type in the second half of the nineteenth century is an interesting synthesis of the aristocratic palace like the Palazzo Farnese (represented by the urban block and the adoption of classical language for the facade) and the apartment house *in linea* derived from a medieval fusion, represented by the aggregation of the rooms in rows and the disposal of the bays in depth. These local traditions explain why the fundamental typological processes after 1850 in Milan, Rome, and Genoa took such a different direction, despite their use of the same models.<sup>21</sup>

In principle, if building activity can rebound following a crisis and resume steadily without suffering additional setbacks, the leading type of the twentieth century will emerge as a diachronic variation of the earlier phase of the past century, and so on.<sup>22</sup> This is evident in the urban growth of the 1930s when Rationalist architects—through the use of a technologically influenced abstract and discontinuous language—expressed their alternative ideology in their urban expansions, but nevertheless referred to the leading type of the time. This type, in spite of the experiments performed on it, was



*Rome. The left over space of Piazza della Moretta in the Renaissance quarter.*

*Rome. A project of infill in Piazza della Moretta (student Gwinne Darden Course Design for Islamic Societies at MIT. Prof. Attilio Petruccioli)*



nothing more than the middle-class apartment building. Certainly the typological weaves are extremely complex and should be reconstructed with scientific rigor to avoid fantasies that could mislead the subsequent process of design. I have decided to discuss the possible applications of the typological process in two situations — restoration and urban preservation. The division is purely arbitrary since I believe in the unity of architecture, but nowadays these divisions correspond to greater and greater articulation and specialization in the discipline. If the role of the typological process is commonly accepted for these two applications, then the restoration of a building without a scientific reconstruction of all the stratifications is not even conceivable, in the case of design process, the question remains open.<sup>23</sup>

## Restoration

The premise of correct reading is that for every typical compartment of evolution there is a corresponding coherent type of intervention. In other words, restoration presumes a scientific attitude in both reading and design. There are four possible critical and operational interventions on a building, corresponding to the level of acquisition of knowledge. The typological process represents the logical first determination of its character. The second is a reconstruction (Italian *ripristino*) consisting of a special intervention that returns it to a preceding state. The third is reuse, that is, the necessary adaptations to the building that allow a contemporary use. Finally there is building restoration, which is a synthesis of the other three.

The technique of reconstruction was favored in the nineteenth century when it was theorized and practiced by all restorers led by Viollet-le-Duc.<sup>24</sup> In itself it is an anti-historical operation since favors one period in the history of architecture over the others and contradicts the very idea of process. It is in use nowadays in those countries of the third world that are searching for their cultural identity and whose political reality entices them into hiding part of their past.<sup>25</sup>

A distinction should be drawn between incongruous differences that result from a real abuse of power and differences that are an integral part of the mutation of a type in architecture. The former can be surgically eliminated, but the latter should be conserved as historical testimony.

A case in point in which I was personally involved is connected with the city walls of the medina of Essaouira in Morocco. Through a series of coincidences the city has conserved its original relationship with the sea, and the sea walls of Essaouira still protect it. Unfortunately, however, the waves have tunneled under the city and in particular under the *mellah*, and several houses have already collapsed. Since the repair of the sea walls carried out in the colonial period was not sufficient, the only possible solution seemed to be a dam of tetrablocks that could reduce the impact of the waves. The problem was, where to place these stones: if close to the wall the weight of the dam could challenge the balance of the wall itself and bring on its collapse. If they are too far away, say a distance of 600 feet, it would divide the lagoon from the sea and reduce it to a swamp. Thus the solution provided by the typological process was almost compulsory: accurately disassemble the rubble masonry of the original wall and reconstruct it in-situ with the same material.

The reuse of a building is not only legitimate, but necessary; it has to adapt to reality. But this operation can be destructive if it is conducted solely with function in mind, without regard for the historical process and without knowledge of the typological history of the building. Typology is particularly important when preserving the facade; the interior can be emptied and radically transformed.<sup>26</sup>

Restoring dwellings involves different problems; here the patrimony of



experiences it underwent during the process of building, changing, and adapting is much greater. Moreover, in contrast to the monuments that come down to us accompanied by archival documentation in which even the name of the patron is recorded, the ordinary dwelling is hardly documented at all. Outside of archaeological ruins it would be difficult to find a primitive structure that can be regarded as an original first construction, owing to the innumerable small changes that have occurred over the centuries. We can say that the restoration of a dwelling is always a synchronic variation of an earlier leading type made consistent with present-day life.

When dealing with dwellings we have to consider two important factors. First, a building type cannot be separated from the building tissue in which it is aggregated with other types. Second, different levels of construction offer different resistance to change: a house changes faster than a city block and a block changes faster than the infrastructure in the territory. For that reason, the leading type is rarely synchronized with the tissue. When restoring a dwelling, it is legitimate to ask if the type is capable of withstanding all the mutations. If the width of the streets of the old tissue, for instance, means that the distance between the two fronts is insufficient it would be legitimate not to allow the type to mutate into a superior and more specialized type (for example from a row-house to an apartment) because of the related increase in volume. If one carried out a restoration under some difficult condition, such as the one described, the untenable situation would soon be degraded.

In conclusion, the restoration of houses cannot make an a-priori reference to a single leading type for a whole city, but must incorporate a range of synchronic variations consistent with different building tissues in different urban areas. The introduction of the notion of typological process eliminates concern for fake and authenticity, criteria invented by antiquarians and by the capitalistic attitude that everything has to be assigned a monetary value.<sup>27</sup> It also destroys the concept of restoration as an immutable project, a concept taken from design, where the separation between office and site work obliges one to describe (and prescribe) all the processes in advance. The association with design, on the contrary, recalls the idea of delayed execution, in which the time of the invention is not coincident with the time of execution as noted by M. Manieri Elia.<sup>28</sup>

Conservation should be seen as an adaptation to the environment that generates a different concept of authenticity which does not reject the evolutionary nature of the historical context. The terms of restoration previously based on surgical operations with heavy technological intervention have been overturned in favor of intensive and continuous maintenance. Recent materials presented as panaceas, but actually scarcely experimented with, have been replaced by the rethinking of traditional ones that work in continuity.<sup>29</sup>

## Urban Preservation

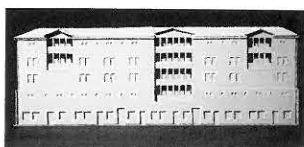
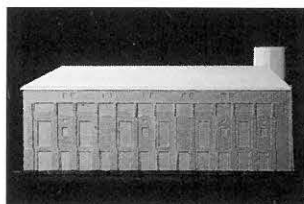
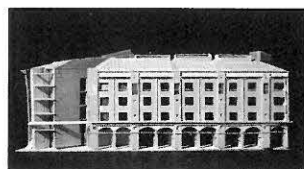
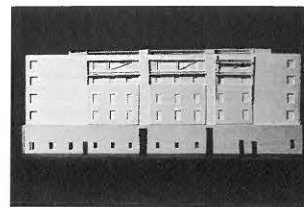
The problem of urban preservation is directly connected with the reorganization of building tissues. Re-establishing continuity in tissues traumatized by war, natural disaster, or uncontrolled building speculation is important. On this level revival merits some elaborate discourse: contrary to many city planners, I believe it is better to re-establish discontinuities than to open up spaces in a misguided attempt to improve the quality of urban green spaces or providing parking.

Constantine in Algeria is a good example of a contemporary city administration in a quandary over what to do with its historical tissue. The city is built on a rocky plateau surrounded on three sides by a canyon which acts as a natural fortress. Its growth since Roman times has been organic and has alternated between loose planning and spontaneous adjustments. When the French colonized Algeria, Constantine possessed a continuous urban tissue of courtyard houses, and not even the French colonial intervention of two roads as a cross-axis at the center of town radiating from the Piazza XX November could upset this.<sup>30</sup> The incisions, in fact, followed the fibers of the tissue and were integrated with building types whose internal open spaces, or backyards, were not very different from the indigenous courtyard house.

But following the independence of Algeria, in Constantine two sizable areas located by the cliff and inhabited by locals rapidly deteriorated, were abandoned, and were finally demolished. Today two large dusty patches occupy the space where houses, mosques, and lively bazaars once stood. Algeria's current economic crisis has at least spared its historic town center from being subjected to a common solution: the building of linear, parallel, multi-storied prefabricated blocks oriented on the helio-thermal axis. But the key question remains: where to go from here?

Constantine requires an urban restoration aimed at the recomposition of the environmental unity of its *genius loci*: a restitching together of the previous continuity, of the traces of paths still visible, and the patching of holes.

The design of a project should, however, not be a wholesale reinstatement of the previous situation. This solution is acceptable only in the case of collectively meaningful monuments such as the old center of Warsaw, or the Aqsa Mosque following its devastation by fire. In most cases, design should base itself on a careful reading of the typological processes of the area which are able to describe the typological expression that preceded the catastrophe in order to recapture the process from that instant. This would require using a synchronic variant of a tissue for reconstructive purposes and not the leading-type tissue usually found in the outskirts of a city. The final product is certain to differ with respect to the original because it uses the synchronic variation most closely linked to the original building project. Conceptually this operation is not very different from the reconstruction of a building.



Rome. Project of infill of Piazza della Moretta. The facade on the lane (from students Kyle Casper, Carlos Ridruejo, David de Sola, Aparna Datey).



The choice of what variant type to introduce into the tissue can be perplexing. If the type is the leading type currently adopted in a given city, that is, the apartment house, then its use in the ancient multistory-building tissues of the same city might be disruptive. At the same time, the use of a more primitive type, e.g., row houses in an evolved tissue, might be incongruous in lexicon, syntax, and materials with the surrounding houses. If the project were carried out over a few years and following the principle of urban self-regulation, it would inevitably be accomplished by further demolition and by drastically increasing volume.

Another uncertainty is determined by the amount of time that elapses between the demolition of a tissue and its reconstruction: in the average and long run, the use of an empty space (generally nodal with respect to the city) as a parking lot, soccer field, or the more socially complex public square determines a new process. In the design phase one questions whether to pursue the new typological process with building types and contemporary tissues, perhaps even paradoxically imposed on new routes, or to look for a reconstructive synchronic variant. This case is well represented by the Piazza della Moretta in Rome. During the Fascist era an entire city block, except for a small corner containing the little church of Santa Rita, was pulled down to make room for a martial boulevard that was never completed. Sixty-five years later, the little square ritually hosts a daily market and is part of the collective memory as an open space. What to do? To rebuild the block, re-establishing the important continuity of the urban Renaissance axis of the Via Giulia, or to plant trees and landscape the square? At this juncture, the decision is no longer in the hands of the architects, but in those of the collectivity.

In conclusion perhaps the idealistic philosophical construction has reached its limits, under the criticism of the modern philosophers from Husserl onward, in Muratori's thinking about its solid philosophical premises. Even if we give his premises to the history of Italian philosophy, the ethical value of operational history as a reference in the design process is valid today. Even if (based on logic-mathematical passages) the principles reserved for history are directly applied to the project, those principles must be the reference and limit of the design process. In those processes such as architectural restoration and urban preservation that involve a redesign of history only a rigorous adherence to the typological process can guarantee an operation whose result will be a product of the contemporary society and not of the will of the restorer.

I hope for a relation with history that is relaxed and not conflictual that can retrace in history the premises of the same modern language. To return to the prologue of this paper, I feel that after an infantile rejection, it is now time to let the Modern re-enter history, as suggested by one of the most sensible of contemporary Italian architects Roberto Gabetti: "If forty years ago we left the quiet and glorious harbors of the Modern Movement, we did it running the risk that every will of Art requires. It was our intent to let architecture re-enter its history."<sup>31</sup>

## Notes

<sup>1</sup> G. Cataldi, "Muratori, Saverio," in *MacMillan Encyclopedia of Architects* 4 (1982), pp. 248-249.

<sup>2</sup> Saverio Muratori, *Architettura e civiltà in crisi* (Rome, 1963).

<sup>3</sup> J. H. Huizinga, *In the Shadow of Tomorrow* (New York, 1976); and O. Spengler, *The Decline of the West* (New York, 1939). Also important in Muratori's intellectual formation were Toynbee's monumental history of the world and the philosophical reflections of Ortega y Gasset in *History as a System and Other Essays towards a Philosophy of History* (New York, 1962).

<sup>4</sup> For example, we can express this idea in the sense of uneasiness we feel for suburban spaces that are deprived of events and made up of microhouses with microgardens or the typically European uneasiness for a periphery that nullifies the countryside whose houses compete against each other. Crisis and uneasiness are two ideas that outside the Western world can be interpreted as contact between opposite cultures. The culture which is financially, militarily, and technologically more powerful will put another in crisis (as it did under colonialism) and the native culture can be conserved only if it accepts marginalization. Different from other cultural forms, such as music or cooking, architecture is weak like fashion, and tends to lose its character. It is not necessary to dispute colonialism here, but only to realize that crisis is a moment in a process of cyclical history. Therefore it will be overcome for sure. The product of the stronger colonial culture appropriated into a culture of synthesis can no longer be that of the colonist or of the native but only some new synthesis.

<sup>5</sup> Where the technological efforts represented by materials, structures and final image of those technologies is not in proportion with the requirements of the simple or family house. Even in the 1950s Muratori was aware of this problem and he used to call them cartoons.

<sup>6</sup> S. Muratori, *Autocoscienza e realtà nella storia della ecumeni civili* (Rome, 1976).

<sup>7</sup> Benedetto Croce, *Logica come scienza del concetto puro* (Bari, 1928), p. 208.

<sup>8</sup> S. Muratori, *Per una operante Storia urbana di Venezia* (1960), p. 17.

<sup>9</sup> All the routes from reality to the spirit and back again are described in Benedetto Croce, *Breviario d'Estetica* (Bari, 1931), p. 144.

<sup>10</sup> Croce, *Logica come scienza del concetto puro*.

<sup>11</sup> *Ibid.*, p. 12.

<sup>12</sup> *Ibid.*

<sup>13</sup> A. Giannini, *La periferia e il progetto* (Florence, 1995), p. 27.

<sup>14</sup> This theme of the type as synthesis a priori whose individuation is the end of operational history is treated in S. Muratori, *I caratteri degli edifici nello studio dell'architettura* (Venice, 1950), pp. 5ff.

<sup>15</sup> A. Loos, "Architektur" in *Trotzdem* (Vienna, 1931).

<sup>16</sup> Actually several times in history the Mediterranean had a unitarian koine through migrations. Typical is the case of Italians from the south in the nineteenth century. Since many of them were master masons, they contributed an Italian physiognomy to many Arab cities including Alexandria in Egypt and Tripoli in Libya. Near Tunis there is a village of fishermen that calls itself Piccola Sicilia.

<sup>17</sup> Since this is not the beginning of the typological process we have to postulate a fundamental type from which our elementary cell derives; that is the Roman domus which through progressive change by densification and despecialization produced the leading type of the eleventh century.

- 18 G. Caniggia and G. Maffei, *Composizione architettonica e tipologica edilizia*, 2. *Il progetto nell'edilizia di base* (Venice, 1984).
- 19 From the Greek *dia* and *topos* meaning site.
- 20 M. Corsini, Introduction to *La casa in linea* (Rome, 1996).
- 21 G. Caniggia and G. Maffei, *Composizione architettonica e tipologica edilizia*, 1. *Lettura dell'edilizia di base* (Venice, 1979), pp. 76 ff.
- 22 Caniggia and Maffei, *Il progetto dell'edilizia di base*, pp. 223 ff.
- 23 Within the large family of scholars devoted to typological studies, Caniggia and Aymonino represent opposite positions; see introduction to this volume.
- 24 Various authors, *Geschichte der Restaurierung in Europa*, 2 vols. (Worms, 1991).
- 25 It is a typical phenomenon among all the newly independent nations to assume an untenable position in name of an ideological choice. See for instance the case of the mosque of Ayodhya in India, or the denial of the Roman past in the Maghreb, or the neglect of Byzantine studies in Turkey.
- 26 For an overview of cases in the Islamic countries. see Renata Holod, ed., *Conservation as Cultural Survival*. Proceedings of Seminar 2 in the series, *Architectural Transformations in the Islamic World* (Philadelphia, 1978).
- 27 Umberto Eco notes, "The taste for authenticity at any cost is the ideological product of a mercantile society . . . to privilege the original is to privilege the first numbered edition of a book, instead of a second edition; it is a matter for antiquarians, not for critics" (from Umberto Eco, *Trattato di Semiotica Generale* [Milan:1991], p. 12; the translation is mine).
- 28 Elia M. Manieri, "La conservazione: opera differita," in *Casabella*, no 582 (Sept. 1991), p. 43 ff.
- 29 The concept of restoration has undergone a profound change in Italy, thanks to the Marconi school. Regarding the idea of the separation of modern materials at the heart of the Charter of Venice, Paolo Marconi recognized the incompatibility of elastic materials and objects to the idea of the maintenance and continuity of materials; P. Marconi, "Materiali e strutture tradizionali nel restauro architettonico," *Componenti architettoniche dell'identità ambientale. Situazione attuale e linee di tendenze in Restauro e città*, 3/4 (1985), pp. 125 ff. (my translation): "My argument is based on the recognition that traditional materials are more or less victims of cultural marginalization rather than authentic or manifest obsolescence. In truth, it still remains to be proved that materials such as brick or wood are necessarily obsolete. In any case I think we have enough evidence to question the durability and efficiency of the so-called technological alternatives, the fruit of a revolutionary period in the 1920s and 1930s which swept through architecture and engineering and promoted elastic materials, in particular steel and reinforced concrete, to the extent that designers and builders used them exclusively. They now regret their involvement in the total obliteration of the culture of traditional construction during those years."
- 30 B. Pagand, "De la ville arabe a la ville europeenne: architecture et formation urbaine a Constantine au XIX siecle," *Figures de l'orientalisme en architecture*, special issue of *Revue de l'Occident Musulman et de la Mediterranee* 12, 73-74 (1994): 281-294.
- 31 R. Gabetti, R., "Restauro come progetto," *Seminario di perfezionamento in restauro architettonico* (Stupinigi, 1991).



*Francesco Giovanetti*

# Typological Process towards Urban Rehabilitation

*The Manuale del recupero of Rome*

In recent times ideas have changed about what is and is not worth valuing in the care and conservation of the built environment. In the past only buildings of prominent monumental or historical value were subject to the ministrations of restorers; today our notions about what comprises the architectural heritage has extended so far as to include buildings for common everyday use. The range of structures to be preserved, following this current thought, now includes nineteenth- and twentieth-century architecture and ordinary buildings, such as common houses. The theory and the practice of conservation are now required to apply their principles to the needs of ordinary life in cities, in villages, and in the countryside.

In the practice of conservation, two different approaches, both based in the history of conservation but representing opposite poles, are beginning to merge. The first approach selects single structures worth preserving from an artistic or historical point of view and to establish a network of these scattered buildings that constitute the monumental heritage of a town or nation. Its aim is to set the chosen structures apart from ordinary use. From this approach derives most of the legislation regulating preservation and conservation in modern countries. Single buildings or areas are listed and put under the direct protection of the public authorities: any change must first be submitted for official approval.

The second approach is to look at the built environment of historical significance as a whole and seek to preserve it as a whole. This is the approach applied to historical centers, which are living parts of our cities that have been exposed to changes and adaptations in response to contemporary dwelling needs and current technological standards. In Italy, as in most European countries, their preservation is entrusted to local authorities such as the city councils, often within guidelines set by the state. The city councils carry out the task as part of their town-planning activity. The care and conservation of listed buildings in Italy have been controlled for the past century by the state and are the responsibility of the cultural heritage department (Ministero per i beni culturali e ambientali) and its local sections (the *soprintendenze*). This organization has proved to be fairly good at carrying out the tasks involved in the first approach, but it has been unable to cope with the expansion of the heritage concept. The city councils have also not proved to be adept at guiding the development of the inner cities while adhering to the principles of care and conservation of the built

Figure 1. Wooden ceiling types from the 17th century (solai a regolo per convento). *Manuale del recupero del Comune di Roma, 1989.*

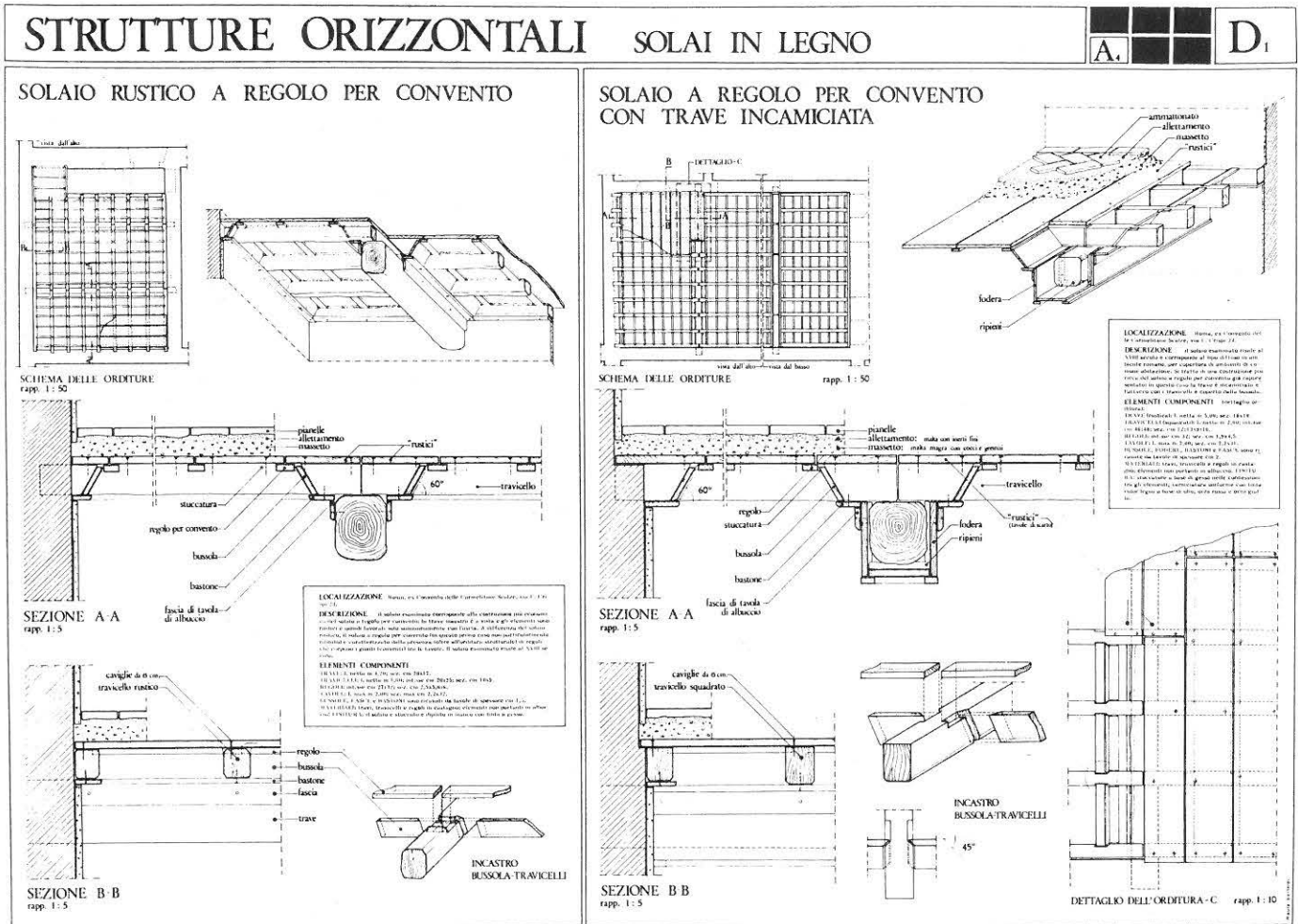


Figure 2. Wooden ceiling type from the 17th century (solaioa cassettonato). *Manuale del recupero del Comune di Roma, 1989.*



environment mainly because the mass movement back into the cities has overwhelmed Italian historical centers since the 1970s, after several decades of neglect. In those circumstances, the value of the historical built environment which was until recently denied is now enthusiastically supported. Nowadays, the built heritage in European inner cities is more endangered by an excess of reconstruction (or destructive renovation) than it is by the neglect from which it had suffered not so long ago.

The control exercised by the municipalities over every plan for change proposed by private owners and developers proved incapable of ensuring the quality required by current conservation standards. The modern building standards and reinforced concrete technology often applied to masonry buildings destroyed the attractive features of premodern architecture because masons, craftsmen, technicians, and professionals no longer had any knowledge whatsoever about the materials and technology of the art of building in pre-modern times.

The research activities that resulted in the *Manuale del recupero* (Rehabilitation manuals) were started in 1983, in an attempt—still not achieved—to set new conservation rules for the technical specifications of Rome's master plan. Its aim was to introduce conservation guidelines and standards. Today, after the completion of the manuals for Rome (1989, 1993), Città di Castello (1990, 1992), and Palermo (1994), a new discipline has been established, dedicated to acquiring knowledge about the pre-modern art of building. Its basic character, a practical-oriented one, is providing a new dimension to the care and conservation of the built heritage.

## The Rehabilitation Manuals

The *Manuali del recupero* are inventories of building elements consisting of detailed drawings and technical files. Large drawings, with plenty of construction details and assembly schemes, show the materials and the features of the building patterns typical of a chosen area. More information is available in the technical files that accompany the drawings.

The method of the manuals represents a combination of several approaches whose results are conveyed through the detailed drawings as the medium of technical information. First, the characteristic features of the construction in a cultural area are surveyed in order to point out dominant and subordinate types. In this step observation and field surveys are integrated by analysis of technical literature relevant to the local situation collected in libraries and public-record offices. The documents that most influenced the selected area are sought out and analyzed, together with price lists, work specifications, and work-site book-keeping in use at the time. Items are then selected to represent the characteristic local features of the art of building.

It is important first to determine dominant types and related derivations by

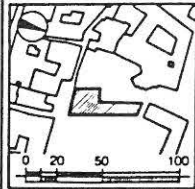
# MANUALE DEL RECUPERO DELLA CITTA' DI PALERMO

## CAPRIATA LEGGERA CON CAVALLETTI

**UBICAZIONE.** Palermo, palazzo Magnisi, piazza Pantelleria.  
**DESCRIZIONE.** Copertura a falde su capriate leggere, con chiodature al nodo catena-puntone e coppie di cavalletti laterali poggiati su dormienti. Struttura secondaria di arcarecci. Falda di serrattizzato a distanza e manto di coppi

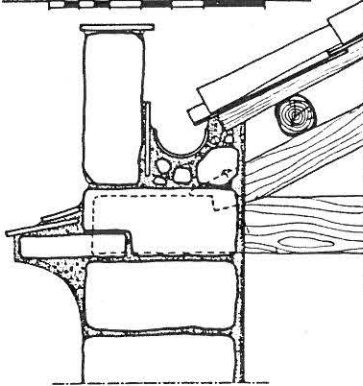
privo di massetto. Coperto del timpano murario in lastre di ardesia. Gronde in testa di muro con veletta (prospetto) e embriciato su mensole laterizie (retro). **ELEMENTI.** Capriata: catena (sezione cm 18 x 18 ca.); puntoni (cm 13 x 13 ca.). **Serrattizzato:** tronchetti (diametro cm 5-12 ca.).

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SEZIONE AA' PARTICOLARE

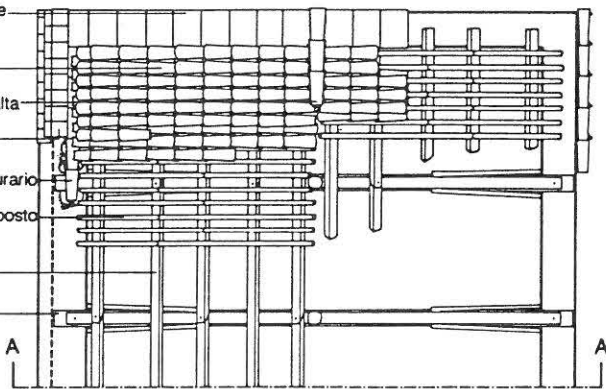
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Embriciato nello spessore murario mascherato da veletta in pietra e cornicione con anima in blocchi di pietra

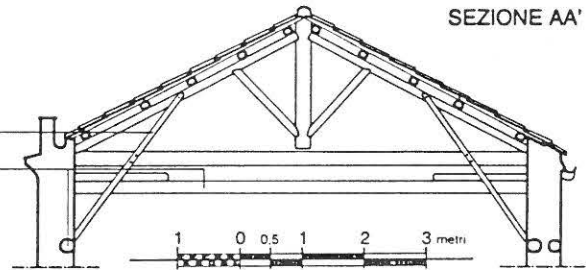
- Lastre di ardesia a protezione del timpano murario
- Manto di coppi maritati
- Colmo di coppi allettati in malta
- Veletta di pietra
- Embriciato nello spessore murario
- Serrattizzato a distanza composto da mezzi ginelli
- Arcarecci
- Capriata leggera con cavalletti binati

PIANTA



SEZIONE AA'

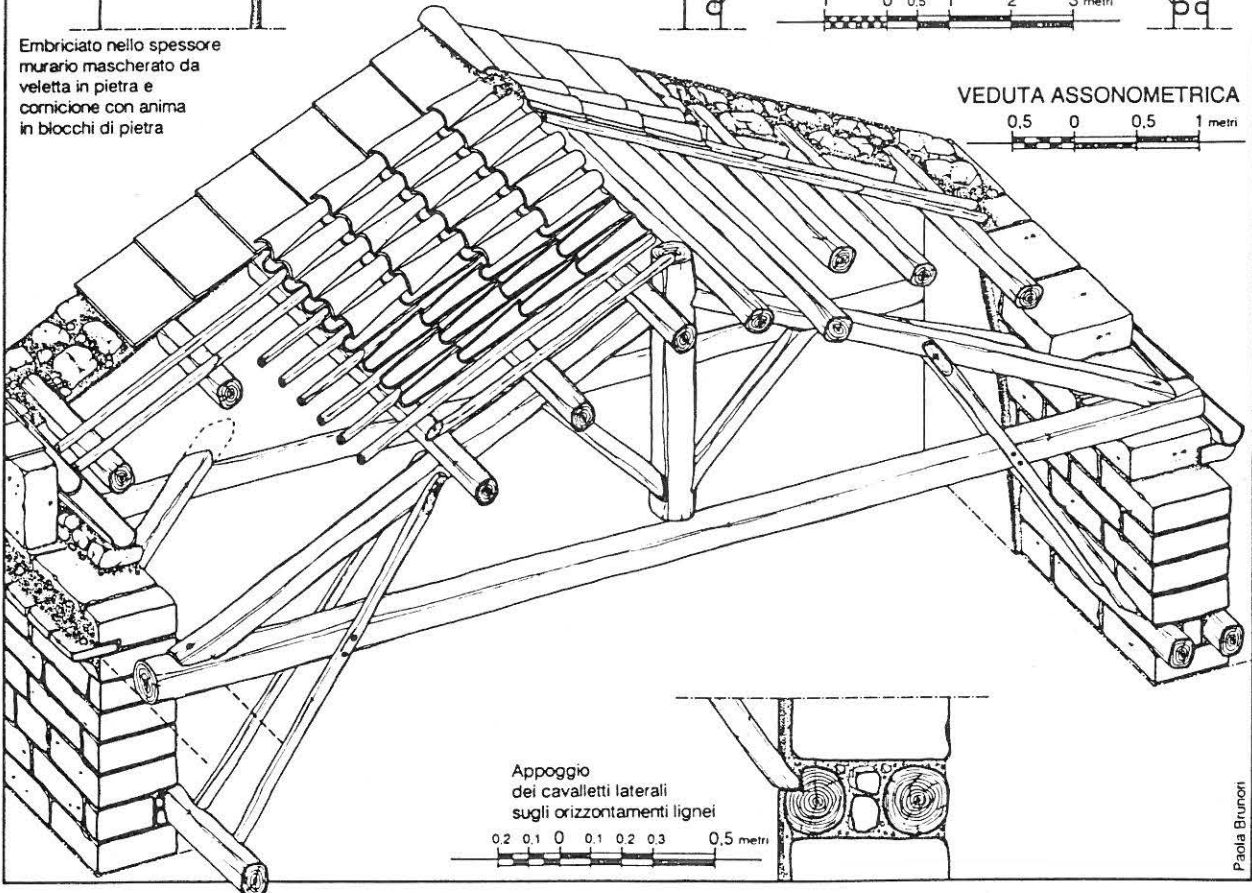
- Cavalletti binati laterali
- Orizzontamenti lignei nello spessore murario



1 0.5 1 2 3 metri

VEDUTA ASSONOMETRICA

0.5 0 0.5 1 metri



Appoggio dei cavalletti laterali sugli orizzontamenti lignei

0.2 0.1 0 0.1 0.2 0.3 0.5 metri

means of the frequency of their appearance as observed in the field. Since recent events may have eliminated types that were once more common than they are today these observations must be checked against the frequency and hierarchy of types derived from the technical literature and contemporary images. In Italy, for instance, a large number of regional variations can be detected that were derived from available materials and local dominant architectural types: wood in the northeast, brick in central Italy, block masonry in Sicily, and so forth.

Third, the knowledge gathered from these various sources is transferred into the drawings, whose aim is to detect and bring to light evidence of the crafts that were utilized to deal with particular requirements, for example, the construction methods used in the seismic areas of Città di Castello and Palermo to counter the threat of earthquakes.

Building types and their construction methods are illustrated using a pertinent specimen. General schemes and abstract patterns are avoided. Typology is derived by means of specimen analysis.

Any extant specimen demonstrates the result of balancing three components: the *structural* features, that is, the capacity of the element to respond to ordinary or pathological stress; the *technological* features, that is, the number, peculiarity, and assembling of elements; and *quality*, that is, precision in workmanship and in finish.

To summarize the methodology of the *manuali*, three lines of research can be distinguished that have been developed so far. The first is *taxonomic*, that is, a census of formal and technical features of construction that are typical of the various cultural areas. The purpose of this process is to produce inventories of structures that institutions and local communities regard as worth preserving.

The second is *methodological*, namely the reconstruction of the technological practice and scientific knowledge that went into the construction of a pre-modern building as determined by observation and by analysis of the available technological literature, e.g., historical treatises, accounts, and worksite documents.

The third is *practical*, namely to revive the knowledge of the pre-modern art of building in order to introduce it into the production system, building trades, and worksite management of today to improve current rehabilitation activities.

The manuals are directed to both ordinary people and technicians. For the first, it is hoped they will encourage an appreciation of antiquarian building materials and elements and in this way develop a preservation-oriented mentality. That is why special care is taken to ensure a high level of draftsmanship.

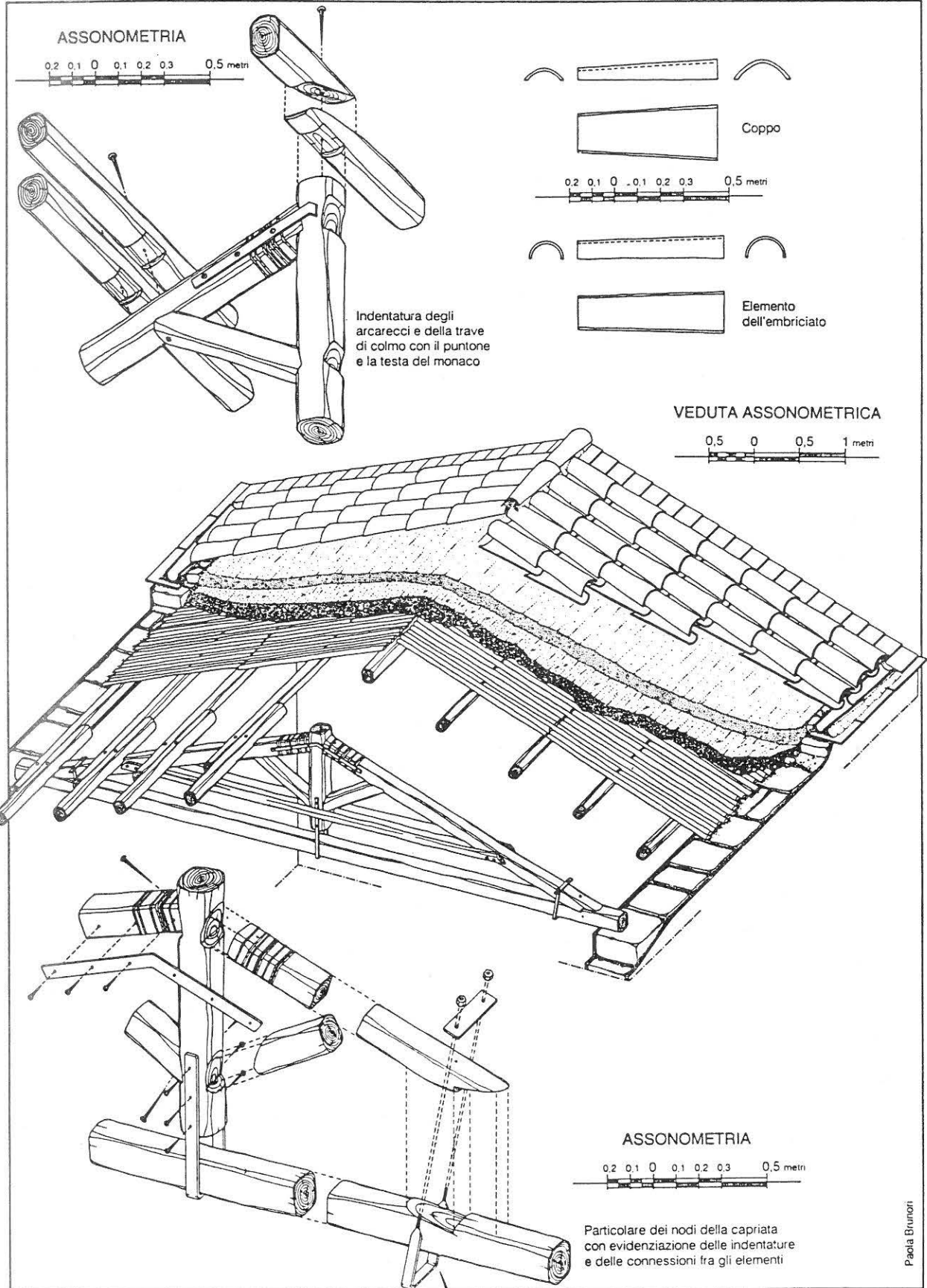
For the technicians, the manuals provide a tool for their work by giving detailed information on the formal and technological features of pre-modern construction. By referring to that information, both craftsmen and designers can carry on a dialogue with historical architecture in its own language: the

Figure 3 (opposite page). Heavy truss roof from 17th- or 18th-century Palermo (tetto a capriata con doppia catena e manto a serratizzato stretto). *Manuale del recupero della città di Palermo*, 1994.

Figure 4 (Next page-left hand side). Heavy truss roof from 17th- or 18th-century Palermo (tetto a capriata con doppia catena e manto a serratizzato stretto). *Manuale del recupero della città di Palermo*, 1994.

Figure 5 (Next page-right hand side). Typical wood and brick ceilings from the 16th to 19th century (solai di mezzane). *Manuale del recupero di Città di Castello*, 1990-92.





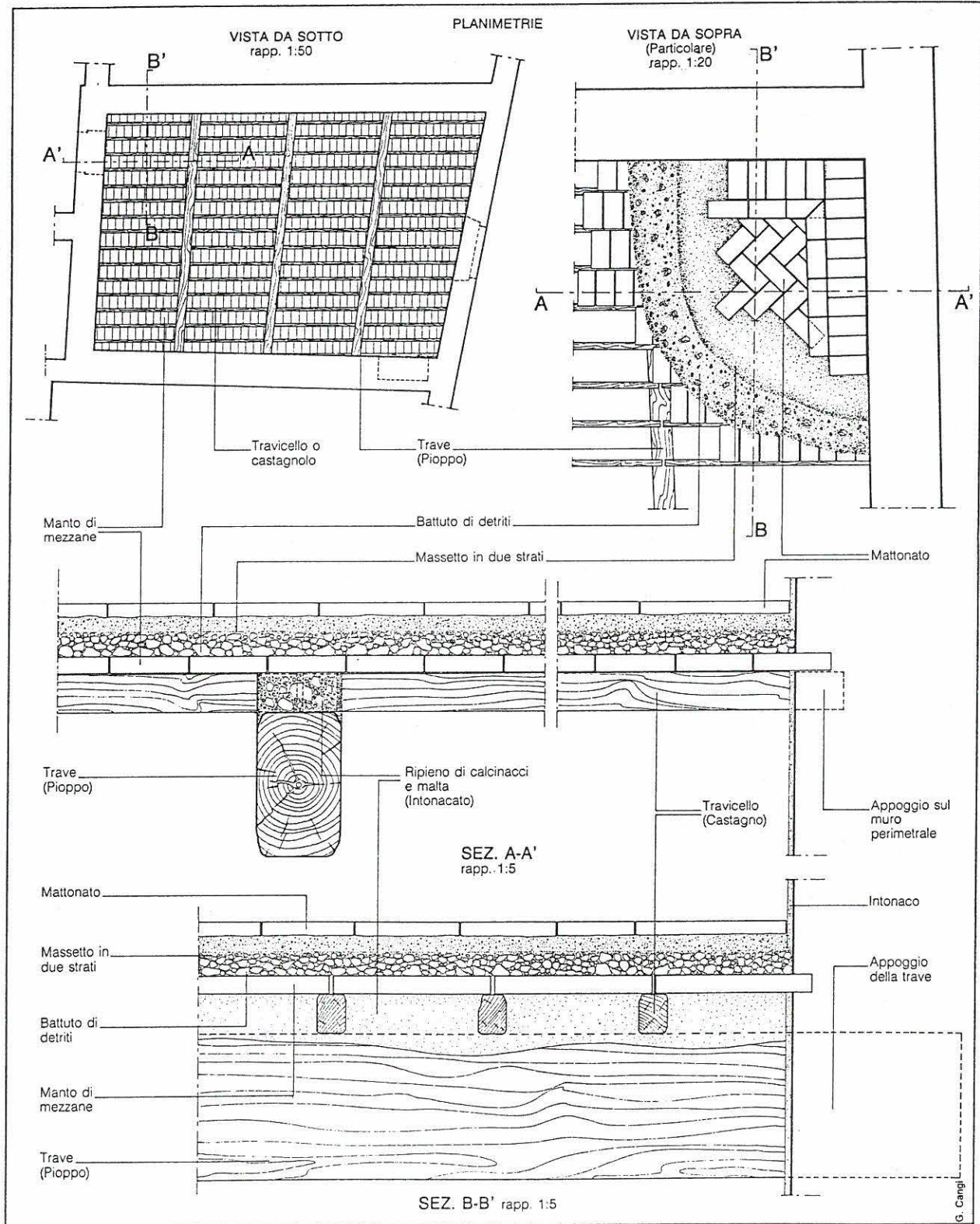
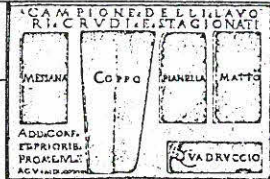
# SOLAIO DI MEZZANE

Foglio 1 di 2

UBICAZIONE. Città di Castello (PG), palazzo Comunale, p.za Gabriotti, p. III. DESCRIZIONE. Solaio a doppia orditura con manto di laterizi. ELEMENTI. Travi (pioppo): luce netta m 5,10, int.sse m 1,80 - 2,00, sez. cm 30x18. Travicelli (castagno): luce netta m 1,80 - 2,00, int.sse cm 33, sez. cm 8x6 ca.

Mezzane: cm 33x16,5x4,5. Massetto (in due strati consecutivi): battuto di detriti e malta grossa (inf.), malta di calce e sabbia (sup.). Finitura: legno naturale lucidato. VARIANTE. Palazzo Gnoni, c.so Vittorio Emanuele, con mensole e trave di bordo.

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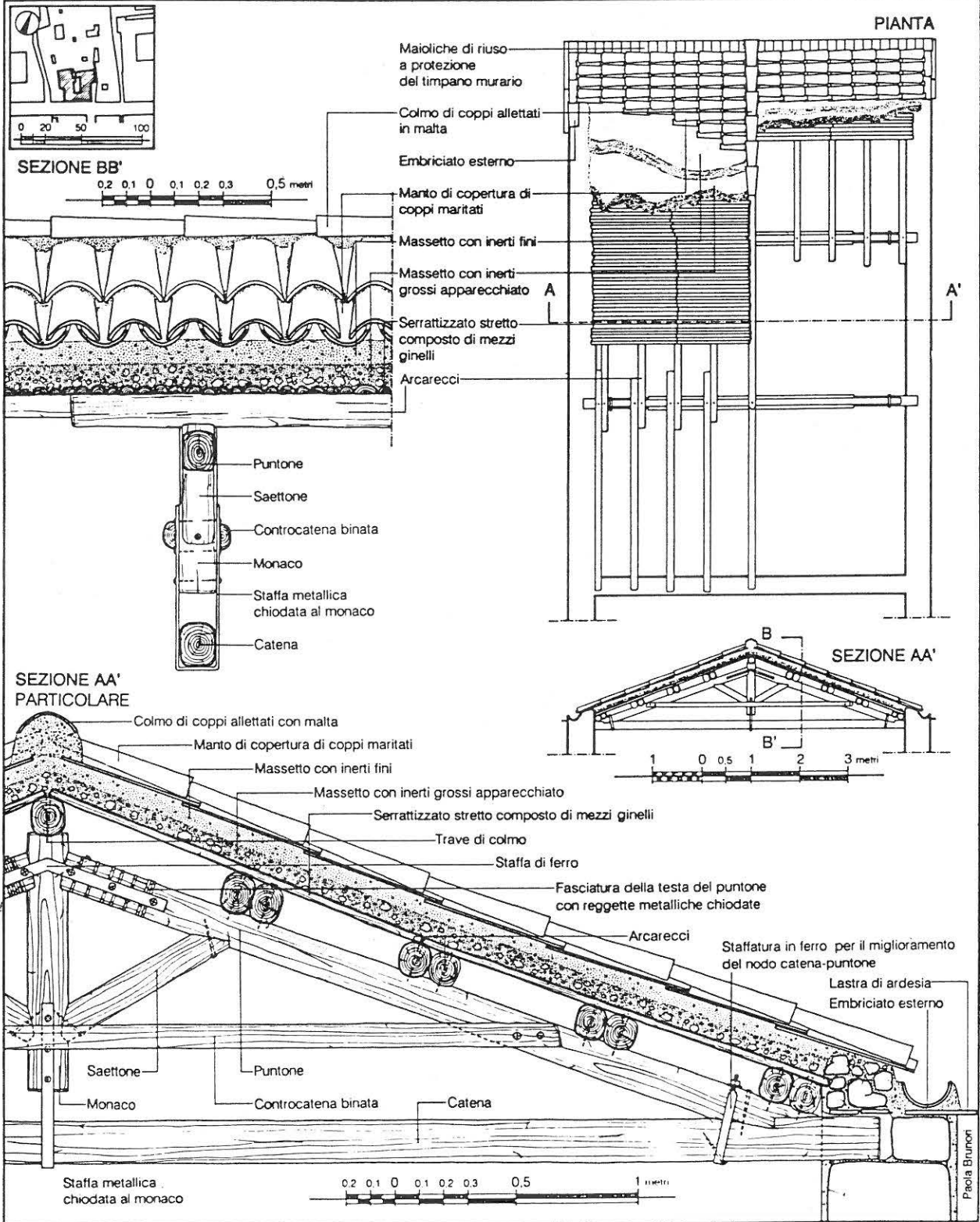
# MANUALE DEL RECUPERO DELLA CITTA' DI PALERMO

## TETTO SU CAPRIATA A DOPPIA CATENA

UBICAZIONE. Palermo, palazzo Cesarò, corso Vittorio Emanuele 417. DESCRIZIONE. Copertura a falde su capriate con catena doppia. Nodi rinforzati da staffe, bandelle e fasce metalliche. Struttura secondaria di arcarecci. Falda di serrattizzato stretto, con massetto in tre strati e manto di

coppi. Gronde in embriciato in testa di muro, gocciolatoio. ELEMENTI. Capriata: catena (sezione cm 18 x 14); puntone (cm 15 x 13); controcatene accoppiate (cm 10 x 7); saettoni (cm 13 x 13); monaco (cm 15 x 17). Serrattizzato: tronchetti spaccati (mezzi ginelli) di diametro cm 5-12.

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language of the pre-modern art of building. It is owing to the misunderstanding of that language that so much restoration work carried on today using modern techniques is rejected by the building organism. One of the best known cases of such a rejection is the Parthenon at Athens, which was strengthened in the 1930s with reinforced concrete—believed to be the ultimate thing at the time—all of which had to be hurriedly dismantled in the 1980s because the decaying added elements were threatening the original parts of the monument.

Less well known is the damage caused in both monumental and ordinary buildings when contemporary earthquake standards were blindly applied to masonry and wood construction, thus imposing a rigid structure onto a type of construction whose distinctive feature is elasticity.

### Typological versus Individual Approaches to Pre-Modern Construction

The *manuali* are tools for planning and design activity. The *manuale* of Rome established the methods for a historical approach to the technology of materials and building elements. The *manuale* for Città di Castello provided the practical dimension by proposing criteria for structural and anti-seismic interventions. In the one for Palermo the *manuale* assumed their definitive character by attaching technical regulations to the detailed plan for the historic center area that would ensure compliance with both in rehabilitation and reconstruction work for entire blocks submitted to typological restoration.

The *manuali* are effective because they combine three complementary kinds of information: they explain the materials and building elements that must be respected, even before they appear in the course of work. They determine the materials to be used by the conservation plan. They suggest intervention criteria through actual examples.

Theoretically, a historic center, like any agglomeration of historical buildings, can be approached from the same two directions that should merge and live together in the practice of care and conservation of all historic structures. It can be regarded as a group of separate buildings, whose features and sequence of historical transformations are unique. Or it can be regarded as a single organic unit, the result of a centuries-old practice of pre-modern building. The approach of the single building taken as a separate entity should be used for the restoration-transformation plan, which should consider any architecture as irreducible to its neighboring building, to be analyzed according to historical evidence and technical systems. The approach of the organic unit, which is at the base of the *manuali*, provides guidelines for a general plan of maintenance based upon the review of pre-modern materials and techniques.

The theoretical standpoint of the *manuali* and their operational criteria do

*Figure 6 (opposite page). Heavy truss roof from 17th- or 18th-century Palermo (tetto a capriata con doppia catena e manto a serrattizzato stretto). Manuale del recupero della città di Palermo, 1994.*

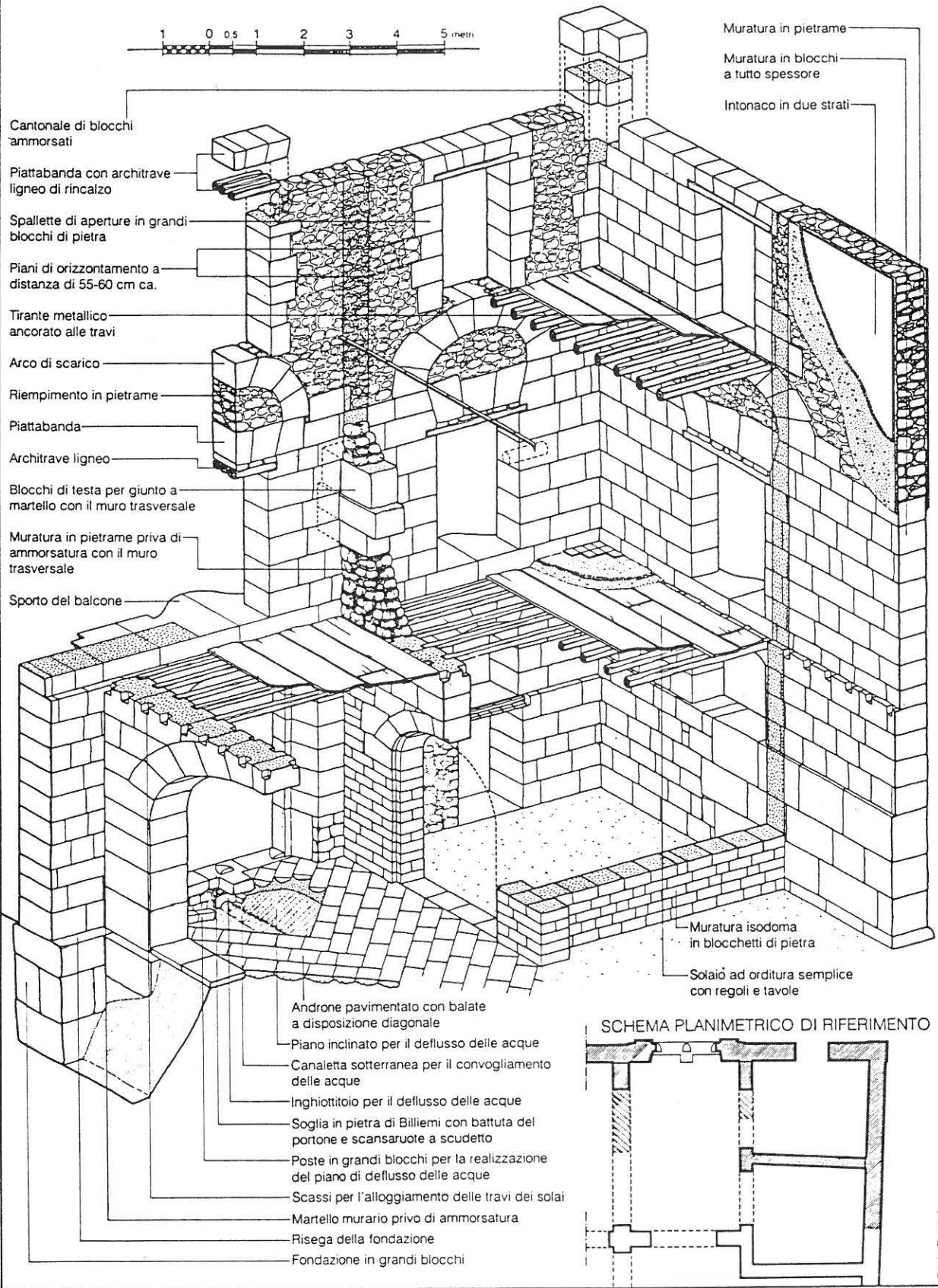
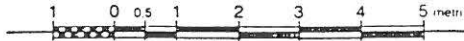
*Figure 7 (Next page-left hand side). Analysis of the walls and wall and ceiling connections in 17th-century palace in Palermo. Manuale del recupero della città di Palermo, 1994.*

*Figure 8 (Next page-right hand side). Brick vault from 16th century (volta a schifo lunettata in mattoni murati a coltello). Manuale del recupero di Città di Castello, 1990.*

*Figures 9 (Subsequent page-left hand side). Brick vault from 16th century (volta a schifo lunettata in mattoni murati a coltello). Manuale del recupero di Città di Castello, 1990.*

*Figures 10 (Subsequent page-right hand side). Wooden decorated ceiling from the 16th century (solaio a cassettoni). Manuale del recupero del Comune di Città di Castello, 1990.*

VEDUTA ASSONOMETRICA



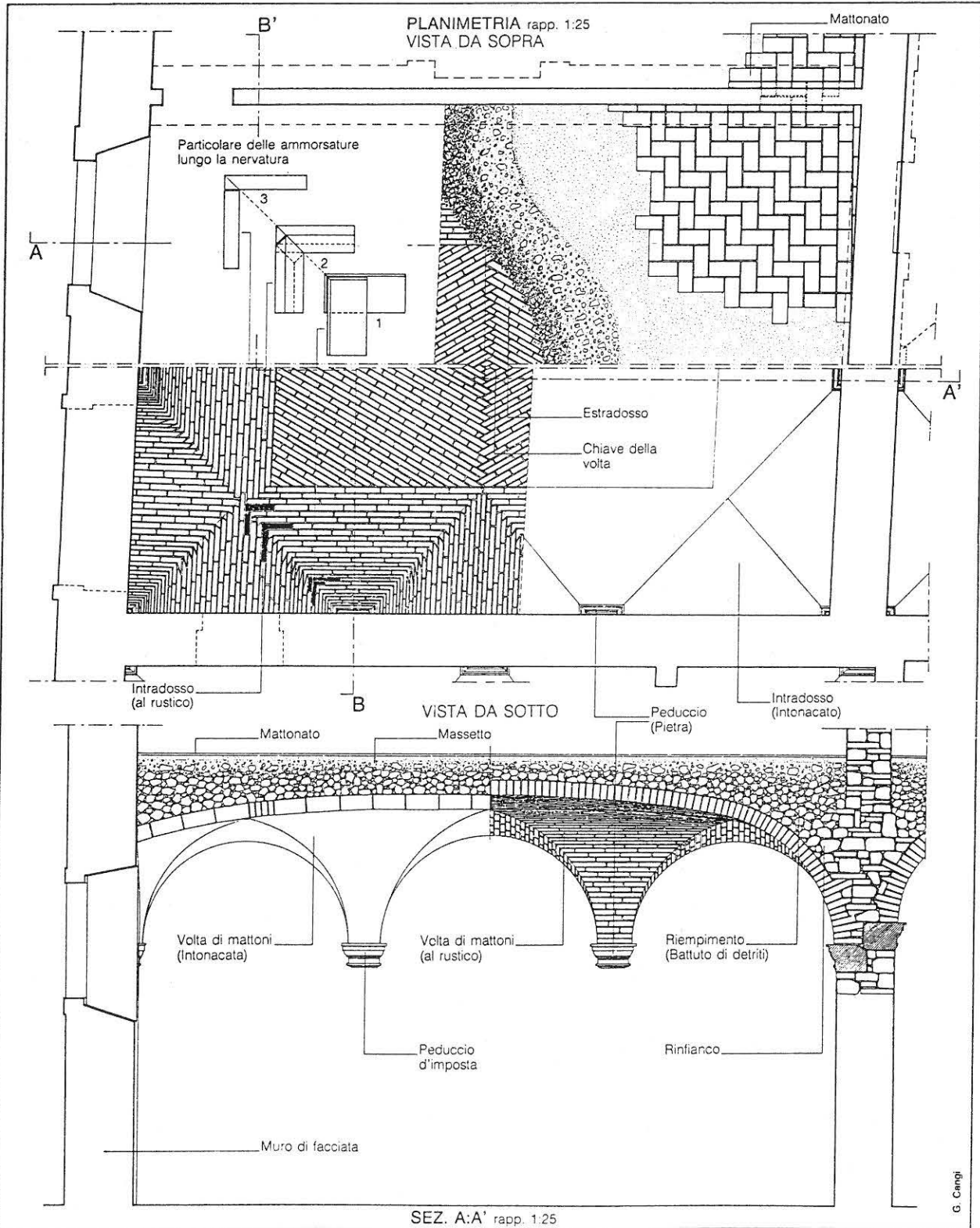
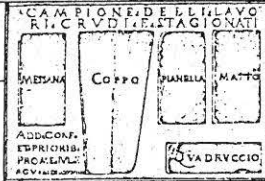
# VOLTA DI MATTONI a schifo lunettata

Foglio 1 di 2

UBICAZIONE. Città di Castello (PG), palazzo Vitelli a S. Giacomo, v. XI settembre 18a, p.t. DESCRIZIONE. Volta a schifo lunettata, di mattoni apparecchiati di coltello a giunti sfalsati, cima del sesto delle lunette non ammassata nei muri perimetrali, h max. in chiave m 4,25. ELEMENTI. Laterizi: mattoni (cm 32,5 x 16,5 x

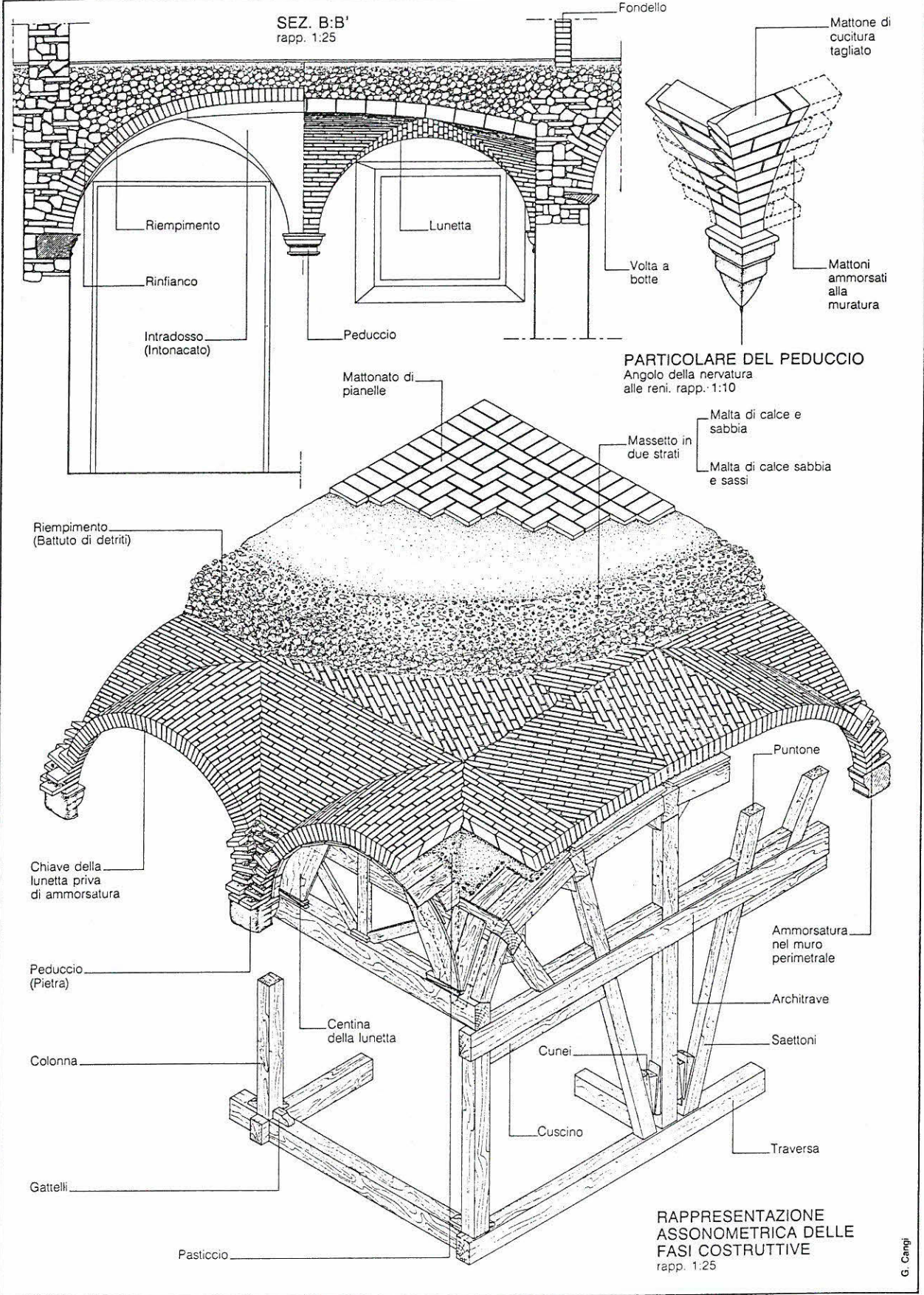
x 5,5) murati con malta di calce e sabbia di fiume (spess. giunti cm 0,5 ca.); tagliati al sorgimento delle nervature. Peducci: (pietra arenaria), ricavati da blocco cm 50 x 30 x 50 ca. Riempimento: calcinacci ben battuti. Massetto: malta di calce, sabbia grossa e sassi. Finitura: (originaria) intonaco in due strati tinteggiato.

Vr

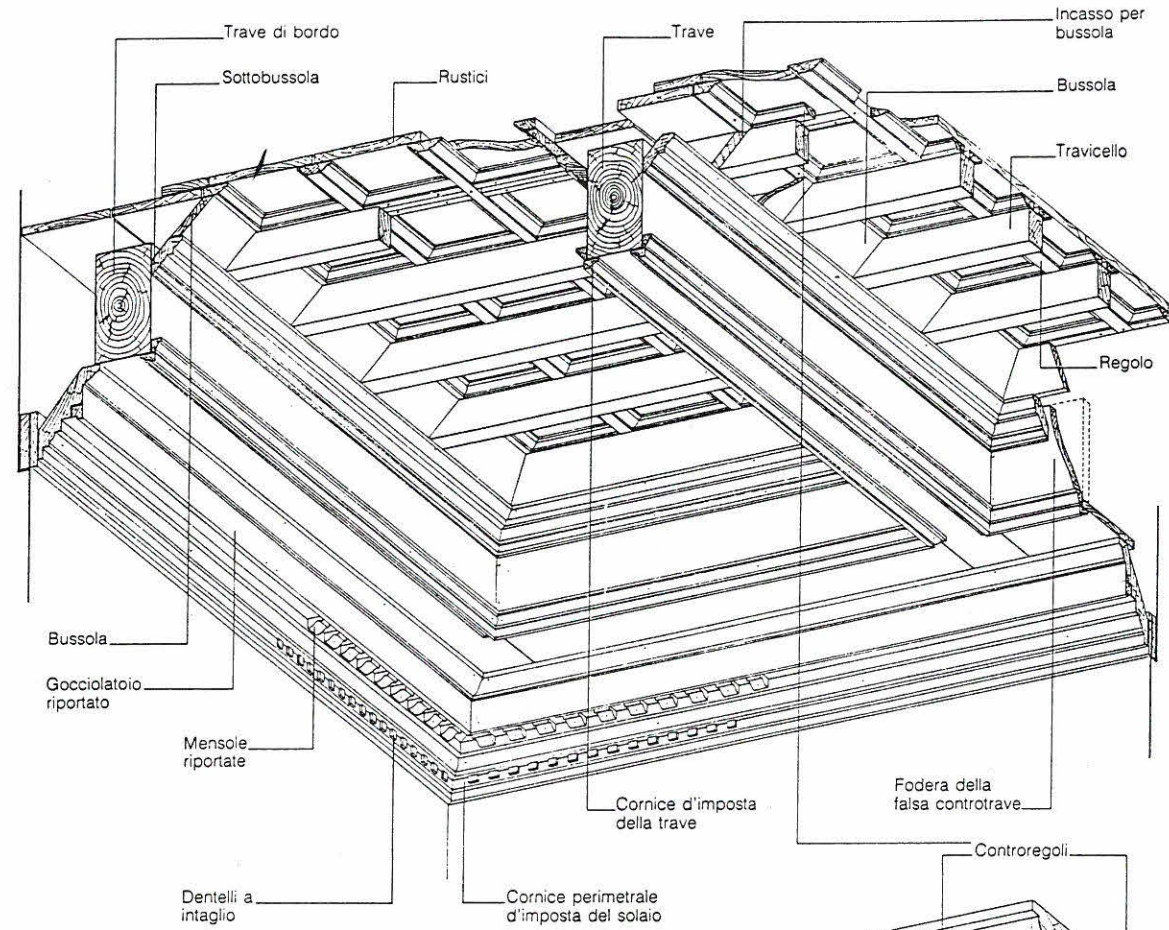


G. Cangi

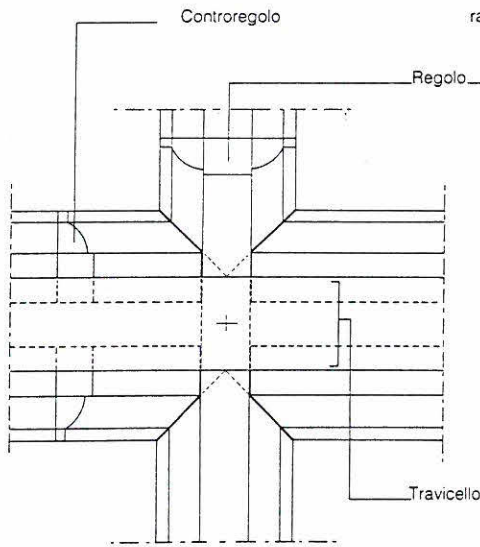






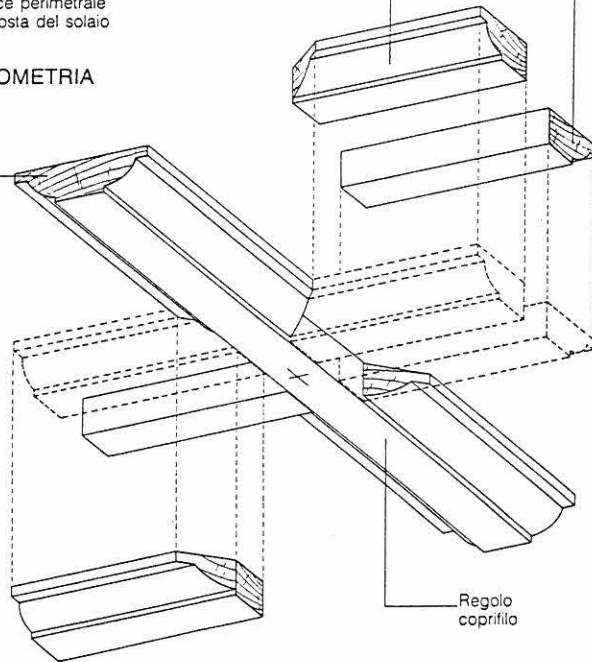


ASSONOMETRIA  
rapp. 1:10

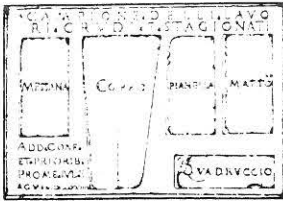


PIANTA  
Vista da sotto

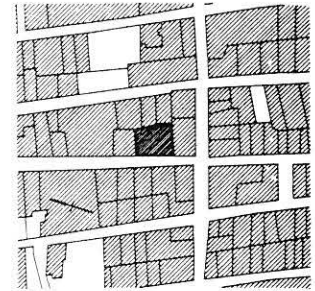
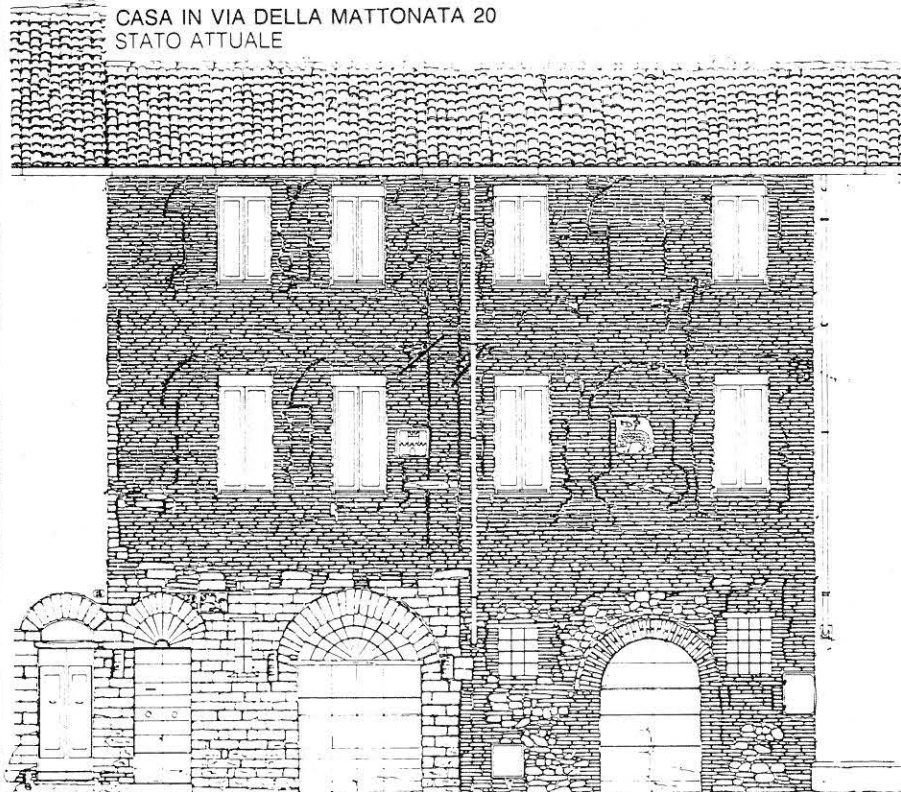
PARTICOLARI DEL COLLEGAMENTO  
TRA REGOLO E CONTROREGOLI  
rapp. 1:2.5



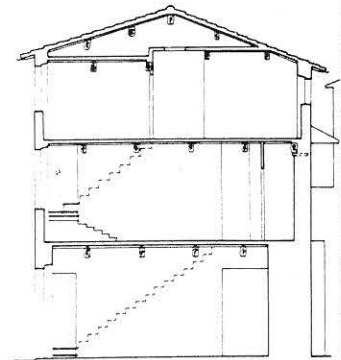
ASSONOMETRIA



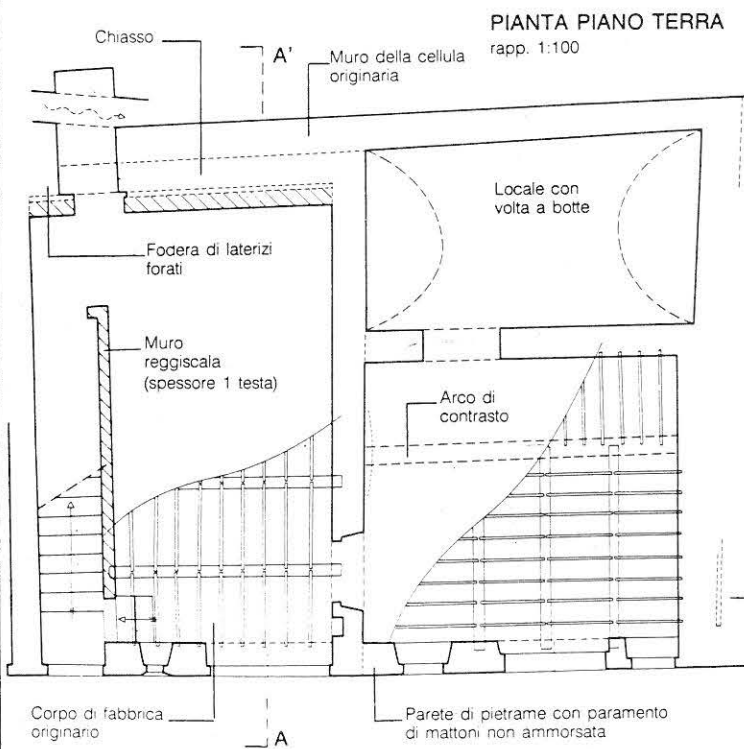
# Un progetto di restauro strutturale



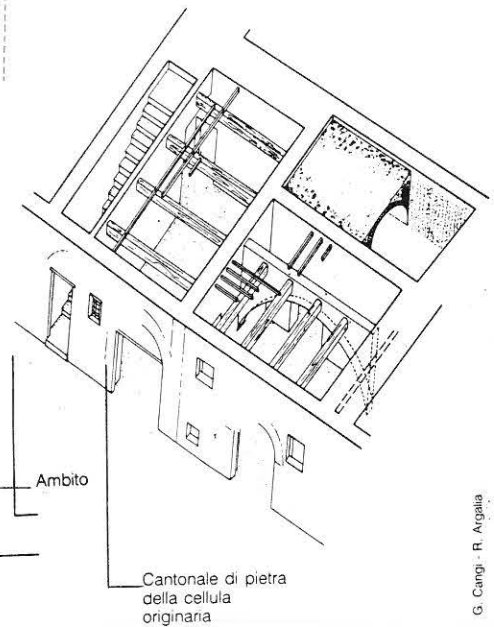
LOCALIZZAZIONE  
rapp. 1:4000



SEZIONE A A' rapp. 1:200



SCHEMA ASSONOMETRICO  
DEL PRIMO ORDINE DI SOLAI  
rapp. 1:200



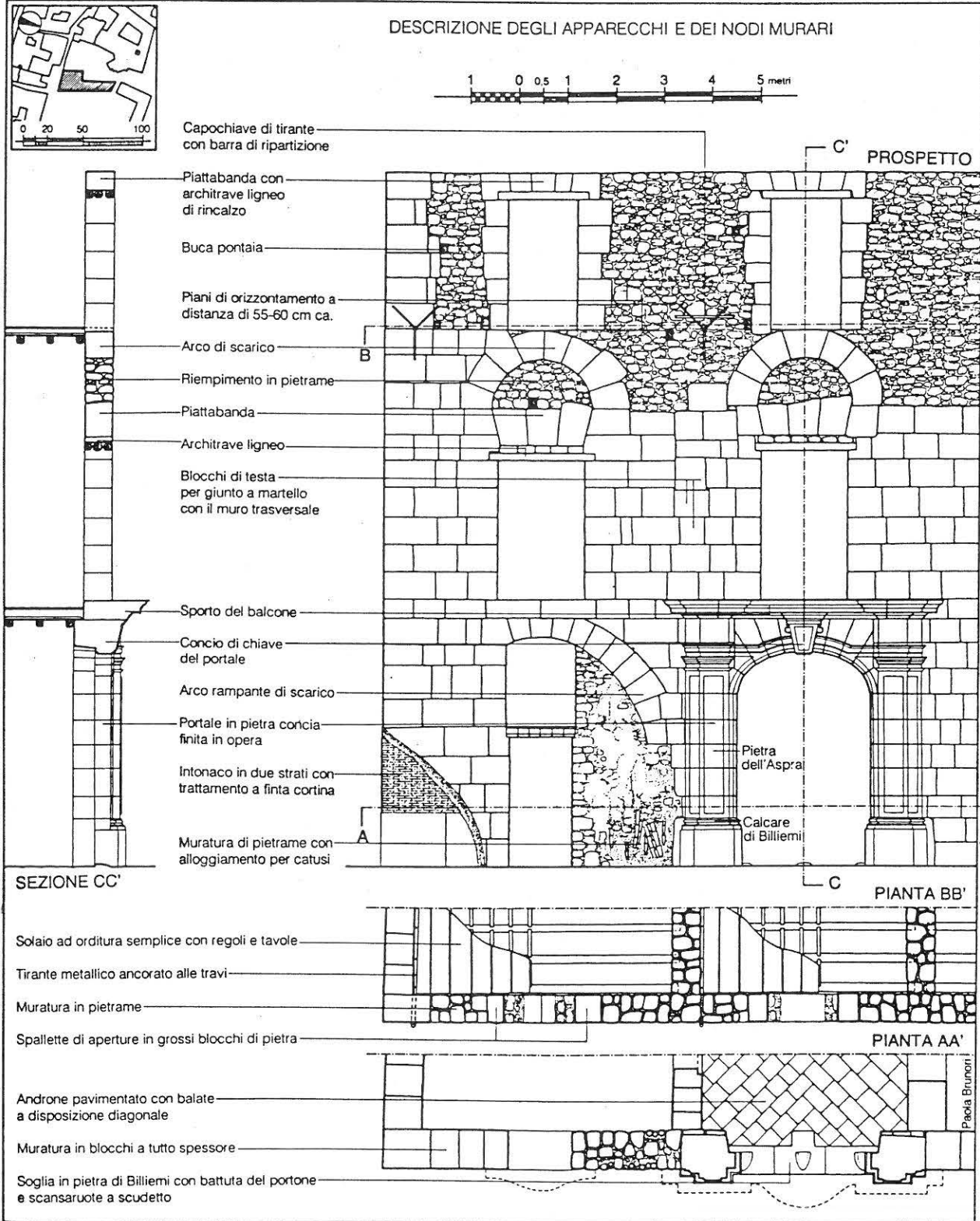
MANUALE DEL RECUPERO DELLA CITTA' DI PALERMO

L'ORGANISMO MURARIO

UBICAZIONE. Palermo, palazzo Magnisi, piazza Pantelleria.  
 DESCRIZIONE. Edificio a tre livelli, in muratura di pietra (calcarenile dell'Aspra) realizzata con pezzature ed apparecchi vari. Orizzontamenti lignei e loro rapporto con le strutture verticali. Illustrazione dell'organismo edilizio ed

analisi dei tipi murari, dei nodi, delle aperture, degli incatenamenti e dei relativi accorgimenti esecutivi.  
 ELEMENTI. Muratura in grossi blocchi (spessore cm 80, h. cm 55). Muratura in blocchetti (spessore cm 40, h. cm 22-24). Muratura in pietrame (scapoli e pietrame di misure varie).

Mu



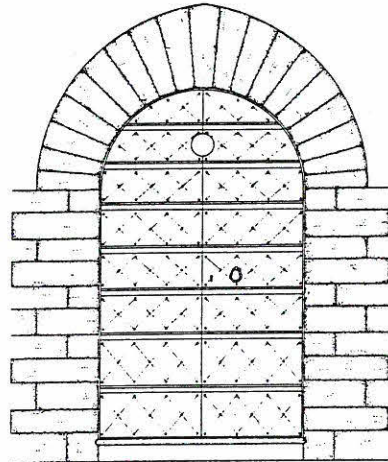
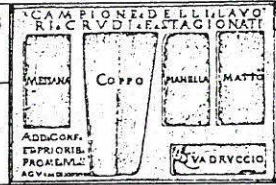


# TIPI DI PORTE E DI PORTONI

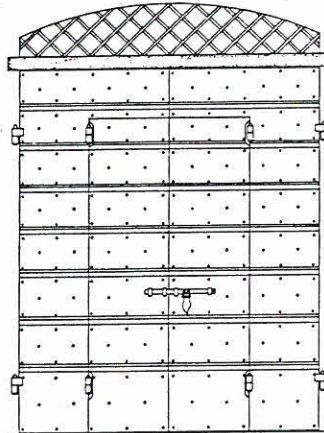
UBICAZIONE. Città di Castello (PG). A: p.za Magherini Graziani 4a; B: v. S. Caterina 7a; C: pal. Vivarelli Colonna, v. Marconi 14a; D: v. del Palazzaccio s.n.; E: v. delle Santucce 32a; F: c.so Vittorio Emanuele 2; G: v. S. Florido 23a; H: v. Plinio il giovane 3 (in-

fisso, v. delle Legne 8a (mostra), v. del Palazzaccio 6a (rosta); I: v. S. Florido 33. TIPO. Alla mercantile a doppio strato di tavole incrociate (A,B,C); con telaio riportato di montanti e traverse (D,E,F); a specchi bugnati e mostre riportate (G,H,I).

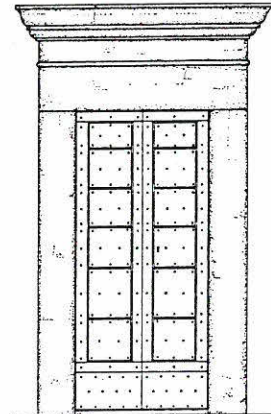
IPr



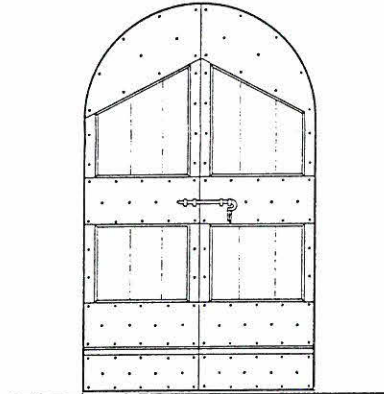
A - Portone alla mercantile a due ante con oculo



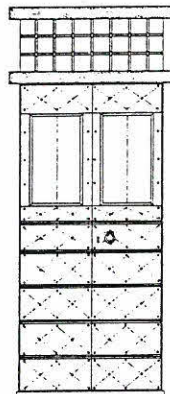
B - Porta di fondo ad ante sdoppiate e battenti esterni



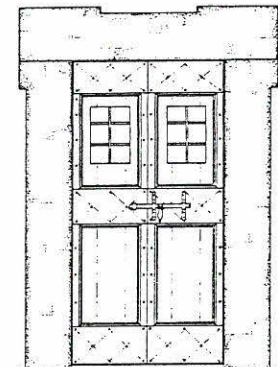
C - Portoncino con mostre riportate



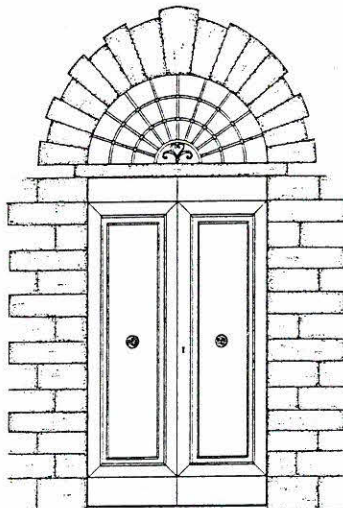
D - Porta di fondo a due ante



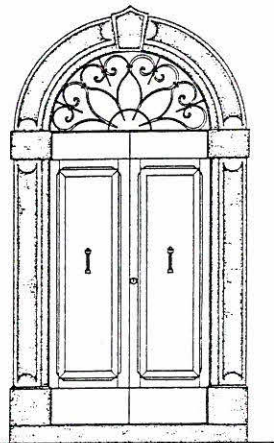
E - Portoncino alla mezza mercantile con soprauce



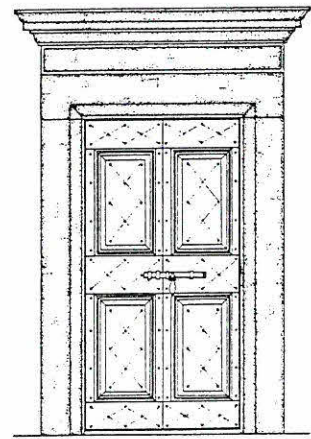
F - Porta con specchiature riportate



G - Portone a specchi bugnati e mostre scorniciate



H - Portone a specchi bugnati e mostre smosciate



I - Portoncino con specchiature bugnate segnate a quinconce



not exempt technicians (both designers and executors) from taking care both of the building in its architectural uniqueness and of the building's character as a body derived from subsequent stages in its transformation, evidence for which is hidden under the last plaster layer and may unexpectedly come to light in the course of the work.

The reason for historical, typological, and constructive analysis is to determine the typology of the transformation process and detect the values held inside a historical building. It is essential to the training of any conservation designer of today, who is supposed to be able to detect, inside an apparently unitarian architecture, evidence of pre-existing buildings which have been swallowed up by new construction over the course of time.

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\_\_\_\_\_, F. Giovanetti, E. Pallottino (direzione scientifica). *Manuale del recupero del Comune di Roma* (Rome: DEI, 1989).

\_\_\_\_\_. *Il restauro e l'architetto* (Venice: Marsilio, 1993).

Figure 11 (previous page - left hand side). Structural features, typological development of a 14th-century house after seismic damage and analysis of seismic risk. *Manuale del recupero di Città di Castello*, 1992.

Figure 12 (previous page - right hand side). Analysis of the walls and wall and ceiling connections in 17th-century palace in Palermo. *Manuale del recupero della città di Palermo*, 1994.

Figure 13 (opposite page). Door types from the 16th to the 19th century. *Manuale del recupero di Città di Castello*, 1990.



*Giuseppe Strappa*

## The notion of enclosure in the formation of Special Building Type

Several notions on the genesis and evolution of special building types can be applied to the reading of the built environment and to design. The expression "special building", according to a research field well-established in Italy, addresses the non-residential portion of the built environment which derives from residential base building. Special building also includes those types in which the residential function is subordinate to its special purpose (i.e., the palazzo, the convent, etc.).

I will attempt to demonstrate that:

1. The most general of these notions are based on a few fundamental acts of appropriation of space (especially the act of establishing a perimeter), fostering a set of building principles that constitute the structural essence of special organisms.
2. These principles can be applied to different cultural areas to distinguish a common set of characters in buildings of different geographical areas and historical periods, thus demonstrating the structural "necessity" of type.
3. Such principles can constitute the base for operational criteria in design. I believe that, in order to actively contribute to practice, such research ought to use the very tools of the designer, analyzing and classifying buildings in a way that is intrinsically different from the one of technical and historical manuals of architecture. A simple example will demonstrate why: if one compares two buildings commonly addressed as "churches", such as a basilica and a central-plan church, it may be found that they have fewer features in common than an early Christian basilica has with Berlage's Stock Exchange in Amsterdam, or that S. Maria delle Carceri shares with Palladio's Villa Capra.

Definitions such as "church", "stock exchange", "villa", widely used in architectural studies, are in reality referring to the specific function of a building, and are therefore insufficient for the designer to distinguish the fundamental character in common among different buildings. Hence it is necessary to retrace their formative roots in order to understand the essence of an "organism", and discover useful data to design.

In the 20th century, architecture studies based on the notion of organism boast a long teaching tradition in the School of Architecture of Rome: Giovan Battista Milani, followed by Saverio Muratori and Gianfranco Caniggia's analyses of base types, laid the fundamental theoretical and methodological base of the research field. Many of Caniggia's notions about

base building can be extended to special types, and will constitute a constant reference to the arguments to follow.

The basic terminology of this presentation is related to:

- . the notion of organism and type;
- . the notion of serial and organic structure.

The one specific to the subject at hand are related to the idea of enclosure:

- . route;
- . axis and axiality;
- . dividing line;
- . margin;
- . node and nodality;
- . pole and polarity.

The notions which I will try to explain by examples, try to establish the methodological principles to read the built landscape at various scales, namely at the one of the building and aggregate organisms. Since the definitions used here are always closely linked to the method, it is important to specify their meaning: if for the historian memory is the recording and ordering of the built environment in all of its different forms over the course of time, for the architect memory expresses itself in the attempt to reduce the built environment to general unifying principles (the structural essence) of which buildings are but particular manifestations.

### **Organism and building type**

An organism can be defined as a group of elements linked together by necessity and jointly contributing towards the same purpose.

Type can be defined as a heritage of common, transmittable characters preexistent to the formation of the organism, governing the generation of the single elements and the structure of their relationships. Type is not definable by a simple statistical recurrence of certain requisites; it is not an abstract model, but rather a synthesis of the original characters of a building: it is the materialization of a persistent set of notions, principles, and characters inherited on a collective basis and accepted by a civilization throughout its history. These features are the ones shared by families of buildings over time and space in an infinite number of variations.

Extending this notion, the built organism is based on general principles determining its transformation over time. Once constructed, the building crystallize these principles in time and space, thus individualizing the type: specific rules particularize principles, making them "individual". Its analogy to the biological or botanical organism has often been emphasized,



but the affinity cannot be extended to the mechanisms involved in the permanence and transformation of buildings. The features common to groups of buildings are not "naturally" transmitted in time, but are artificially altered through the innovative, original contribution with which each civilization reinterprets and adapts to its own needs the traditional types that it had inherited. Buildings embody a historical type; once they have been built, they give their own contribution to the evolution of type through a continuous sequence of transformations constituting the typological process.

Thus, a typological order of the built environment cannot be formulated on a purely taxonomical basis like in botany but, in order to be usable, it must be based on the essential reasons underlying the continuous transformation and conveyance of certain building features over time.

### **Level of typicality**

It can be defined level of typicality as the quantity of attributes a building has in common with others (thus distinguishing it from similar building groups). Therefore, the maximum level of typicality is that which identifies itself with a single building "in all of the attributes which can be conferred to it" (Caniggia-Maffei, 1979).

### **Serial and organic structure**

An element is the smallest component of a structure. The definition is inclusive, and practically applies to any scale of architecture, from the building to urban form (Maretto, 1993).

Structure is the rule linking elements together in a recognizable form generally behaving according to a geometric order. This rule determines the relationship among elements, informing the character of their aggregations.

Serial structure is an ensemble in which one element can be replaced without causing substantial changes to it; in an organic structure, on the contrary, the arrangement and the distributive, static, and expressive role of each element is such that it cannot be replaced without altering the structure itself. It should be underlined how the character of a structure is strictly related to the character of its elements. Namely:

- serial structures formed by serial use of a serial element (totally serial structure).
- serial structures formed by organic elements;
- organic structures formed by serial elements;
- organic structures formed by organic use of organic elements (totally organic structure).

### **Limit, Perimeter, and enclosure**

Since special buildings, by definition, are generated as specialization of base residential construction, their technical terminology can be derived from the one of residential organisms and fabrics.

### **Course or route**

Both the English word "course" and the Italian "percorso" derive from the participle of the Latin verb *currere* (to run, to pass), and indicate the action performed to cross the entire extent of a place, implying a point of departure and one of arrival (two poles with different values). Therefore, the term is inseparably linked to motion, an ever-changing relationship between time and space. This is fundamental to understand the hierarchization of space along a route according to the proximity to a pole, a node, or an antinode.

### **Node and nodality**

Formative building processes are based on the concepts of centrality and "peripherality", of nodality and anti-nodality, which constitute the fundamental key to read an organism's character. A node can be defined as a specific point within a continuum that is at the intersection of two continua, or as the branching of one continuum into the other one, or as a discontinuity within a continuum<sup>1</sup>. This is a critical notion to recognize, in general terms and at various scales, the character of an aggregate of elements, of a single building, or of an aggregate of buildings. The notion of nodality, linked to the previous one, expresses the connection between the components of a building or of an urban organism which is not necessarily identified by a point, but by axes and their intersections (axial nodality). Nodes originate from the everyday use of an enclosed space, thus usually from those routes that had been individuated by the formation processes of building types and fabrics, and geometrized to structure the whole architectural space. Opposite yet complementary to the latter is the notion of "anti-node", which is defined as the singular point in the opposite direction (i.e., peripheral) with respect to the central position of the node.

In building organisms, the formation of the node is the fundamental problem, even during construction, in which the constructor's technical and expressive skills are concentrated.

## **Axis and axiality**

The axis (from the Latin axis — pivot, wheel axle), is formed through the progressive “geometrization” of the routes within the elementary architectural organism, and is often generated by the consolidation of ritual actions.

The axis requires two poles, one at each end. With the exception of structural shifts caused by major design intervention, the main direction is always one, due to the specialization of the two poles and their different degree of polarity (polarizing pole, polarized pole).

The nodal axis, along which the main fluxes of movement occur (often, but not necessarily, corresponding to the main entrance), individuates the center of the overall geometry that unifies structure and function into one constructive action. Along its predominant direction, the axis establishes a sequence of elementary structures, simultaneously orienting and reinforcing the direction of movement from the initial structures (portal, pronaos, vestibule, etc.) to the final one (apse, loggia of the palazzo, opisthodom, etc.). This observation implies that the hierarchization of the sequence of elements of the enclosure is not a mere geometrical composition, but comes from the ways in which man uses and knows space, and to the time in which cognitive reading and functional process occurs. Axes have a centering and unifying effect on the built environment, and are inevitably associated to the dividing lines organizing the overall structural system<sup>2</sup>.

## **Margin**

It indicates the ultimate component defining the enclosure. It is constituted by a dividing line individuated by structural systems (load-bearing walls, pillars, etc.), or simple structures (boundary walls, fences, etc.) that can also be associated to an anti-nodal axis identifying anti-nodal routes.

## **Pole and polarity**

From the Latin *polus* (pivot; *polos* in Greek). In Caniggia’s definition, “the pole indicates a sublimation of the term node, in general determined by the presence of various continua, not so much intersecting but rather terminating or starting from one point. (. . .) However, the distinction between node and pole is intrinsically linked to the reading scale”<sup>3</sup>.

In general, it is possible to define as “polarity” the character associated to the pole, namely the character of an organism with properties of attraction and orientation, and as “polarization” the act of attracting or orienting towards a direction.

In special building organisms, at the intersection of two or more equivalent axes, the pole generates a vertical axial nodality commonly named "polar axis" (as for instance in central-plan organisms)<sup>4</sup>.

The notion of enclosure may be derived from that of typicality level. On the basis of the aforementioned definition, a minimum level of typicality can be defined as that which comprises all buildings, coinciding with the founding actions discernible in every form of human settlement: the appropriation of space leading to the enclosure (in a way analogous to the complementary need/action of protection generating the roof). While the maximum level of typicality coincides with all characters of one and only one building (hence matching building type with building), the minimum level of typicality corresponds to the identification of the most general characters of a set of building types; in other words, the primary forms of a building action. These original forms are the typical elementary structures generated during the very first phase of settlement, and that have no clear precedent in the history of that territory. Usually an enclosure is the legible component of an organism's system. Not even the most elementary megaron, in fact, can be considered as correspondence between a single structure and the building organism (the house). These primary shapes coincide, instead, with the original symbolic forms<sup>5</sup>, capable to synthesize some fundamental aspects of knowledge by giving a conventional expression of them; they can be considered as elementary organisms divested of any attribute in order to reveal their typical, objective essence, in a way that is not very different from other symbolic forms used in other sciences such as mathematics (think, for example, about the notion of "set"). In this sense, their identification is facilitated by the consolidated relationship between elementary tectonic form and conventional expression, in a way similar to ideograms, in which a concept is expressed through direct graphic synthesis.

It is not a coincidence that Egyptian ideograms and Chinese pictograms express the concept of enclosure in a similar manner, turning it into the root of more complex words associated to the notion of perimeter and protection, such as house, city, and nation.

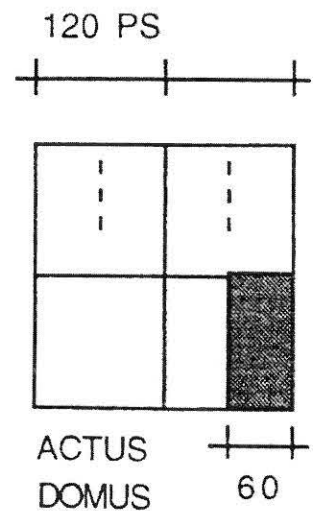
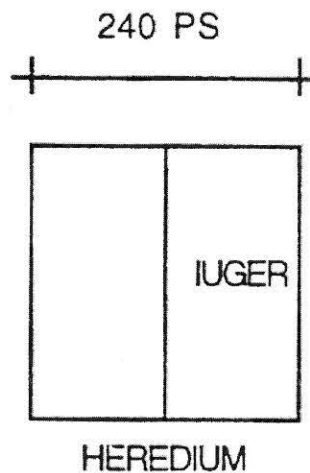
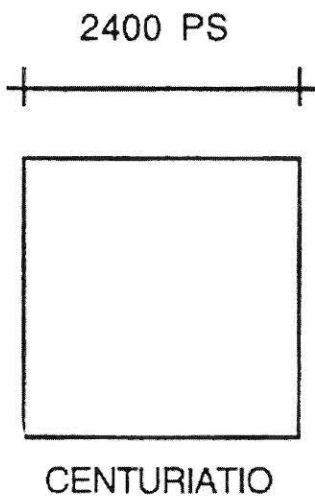
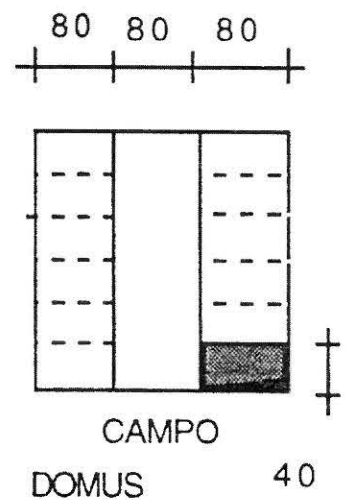
The origin of the enclosure and of the complementary covering can be drawn from the same generating principle: the idea of linkage which is at the root of both the action of enclosing and the one of covering expressed by the node. In its more explicit forms, the act of covering is indicated by a symbolic landmark (the acroterion of the pediment in classical temples, the lantern of cupolae in churches, the pinnacle of bell towers and minarets).

It is possible to argue on the formative process of architectural space through the dialectics between the act of enclosing and the act of covering, beginning with the house as synthesis of both actions. Gottfried Semper refers these two actions to the two original forms of civilization: nomadic cultures and those which originated in hot climate through an active



relationship towards nature. The domus and the hallenhaus exemplify these two different approaches to building.

Even those buildings which derive from the specialization of the house largely maintain their original character. The symbolic shape of the enclosure is directly associated to the majority of buildings consisting of a series of modular spaces (special serial buildings), as result of a general organizing principle often based on the idea of an open space within a perimeter (such as the convent, the palazzo, etc.)<sup>6</sup>. On the other hand, in the symbolic shape of the covering, dialectically related to that of the enclosure, it is possible to recognize the building action structured around one dominating room (special nodal building). In this case, the covering is a fundamental element organizing space, and it identifies the spatial node linked to the symbolic action of synthesizing the complex componentry into one single architecture. This synthesis can be deemed typical by presence of one space dominating the hierarchy in terms of organization, space, and structure. Center and periphery, node and anti-node, are therefore inseparable concepts to understand the inextricably symbolic and functional origin at the base of the hierarchy of special types. The two actions interact and complement. Imagine a basilica organism, originated from the action of defining a central space by a peristyle, later protected with a covering. The dialectic and complementary relationship between the two actions is often legible in the logic of transitional phases: when the open space has a markedly nodal function, it prefigures the "necessity" of the covering. The peristyle of Diocletian's palace in Split, where were found traces of an "uncovered basilica"<sup>7</sup>, is an example of the potential vocation of the central space to become the covered node unifying the whole organism. Therefore, the organization of special building into serial and nodal ones affects not only the functional and construction

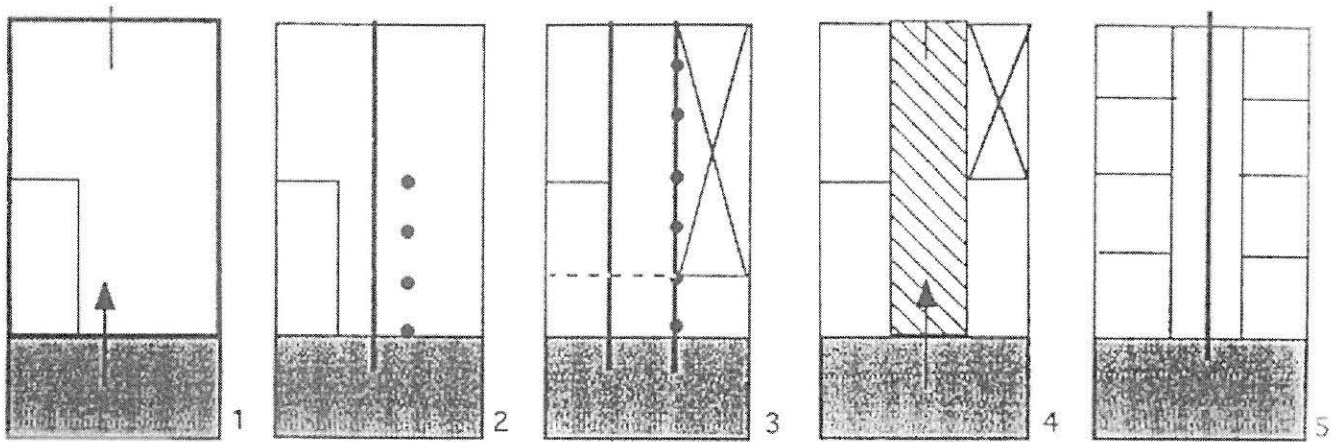


data, but also the symbolic character inseparably linked to them. The permanence of the notion of enclosure in the relationship between basic and special buildings is sometimes much more direct than one would deduct from simple morphological analysis. An enlightening example of this is the persistence of the domus layout in special types, the typical dimensions of which link the building enclosure to the general Roman parcelling system, demonstrating the continuity of territorial transformation processes from Late Classical to the Medieval period.

The base dimension of the heredium (240 x 240 Roman feet), derived from the subdivision of the centuriatio, originates the actus (120 x 120 feet), half of the side of which (60 feet = 17.70 meters) constitutes the base front measurement of the domus lot. Note that the etymology of both the Latin heredium and the Italian lotto (lot, parcel of land; from the Frank lot) indicates the notion of inheritance, of a continuously transmittable asset. Within the land parceling, the evolution of the elementary domus is always based on the principles of nodality and axiality, margin and dividing line, associated to the notion of enclosure.

The domus, in fact, gives rise to special typological trends as well as to multi-family assets decomposing itself into single-cell row units (pseudo-rows), yet maintaining its own generating principles linked to the use of the enclosed space.

A representative example is the Venetian house, the typological matrixes of which are deeply rooted in the Roman Po Valley. As found both above sea-level and on land-fill constructions, the recurring dimensions (to be regarded as typical and variable within reasonable limits) of the Venetian single-family domus derive from the traditional half-actus module or, in the case of the 40 pedes front, from the direct subdivision of the heredium into three parts along one direction (two strigae and one open space in-between), and into six according to the other, thus producing the common aggregation with squared fronts onto the public space of the campo (the Venetian square). By schematizing a very complex process, the larger lots are preferably laid out with the long side facing north in order to have the water (often a small canal or rio) parallel to the terra firma passage on the side by the first construction typically oriented south. The internal route is progressively covered over time, generating a portego (portico) which geometrizes the route and originates an axis polarized at both ends by entrances. The following building takes place on the southern side, starting from the external route with more nodality according to the typical process of "tabernization" (Caniggia-Maffei, 1976) through the formation of the internal dividing lines complementary to the centering axis. This internal space assumes two fundamental roles related to economic and social processes - the changes of which were already quite advanced in the 12th century — which led on one hand to the differentiation of the domus type into upper-class residence and palazzo, and on the other to its subdivision into low-income family houses. The first case brings to the



formation of the nodal space of the special building — the deposit, the merchant fondaco and, on the upper floor, the sala Veneta legible from the outside through the polifora (an originally open, transparent space). The second case generates an internal route (calle) as the axis of a row-house type of aggregation.

1- Elementary domus and formation of the enclosure margins; 2 - Forming of the "portego" and centering axis; 3- Starting in "tabernization" and forming of dividing lines of warehouse and "sala veneta"; 4- Formiation of the "casa fondaco" type around the nodal space of the warehouse and "sala"; 5- Alternative conclusion of typological process: formation of pseudo-rows on the "calle" (venetian narrow road) nodal axis.

Facades originated by such process — both in the Byzantine fondaco and in the Gothic house, as well as in the following Renaissance types — immediately reveal margins, centering axis, nodal space, and dividing lines. In particular, the space b (see figure) individuated by the central polifora (transparent, a discontinuous load-bearing structure) is originated through a process starting from an open space, while the side walls a and c (opaque, load-bearing and continuous) come from the first phases of construction. Notice how the walls a and c are not symmetric in the case of buildings that directly derive from the domus, while they become symmetrical when the inherited type is embodied in buildings intentionally designed during the Renaissance period. The vertical tectonic nodes A and B (often paraste) or horizontal D (marcapiani) are often clearly legible and are typical features inherited by the carpentry tradition of the Veneto region. The entire polifora is considered as boundary of a virtually open space; it therefore shouldn't surprise how sometimes the centering axis C (also common to the gothic area) can meet a continuous vertical element<sup>8</sup>.

On the basis of what has been said, the enclosure may be analyzed not only as the result of the act of enveloping space with a continuous structure (as evident in the landfill Venetian house, being itself a fence, or in typological trends such as the castrum, the praetorium, and the forum, representing the notion of enclosure as physically concluded space), but also as a symbolic form resulting from the act of defining a conventional space within which



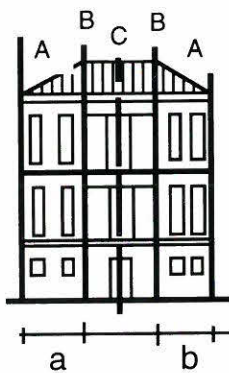
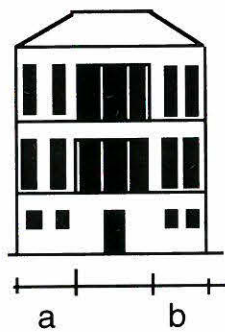
elements, structures, and systems produce the mechanisms of centrality, periphericity, nodality, anti-nodality in a relatively autonomous thus legible way. Such space can constitute the parameter with which to define the reading scale in function of the hierarchization of the organism's components. In other words, the notion of limit and enclosure is not simply derived from the presence of physical margins, but is also linked to the complementary notion of route and those of nodality and centrality related to it. We can therefore state that there are features in common between the notion of enclosure at the building scale (exemplified by the domus), and the notion of enclosure at the aggregate scale (exemplified by the route and its pertinent area in row-house aggregations).

This can be exemplified by the reading of the formation of the block, the analysis of which cannot be referred to the interior space physically defined by the streets (except in planned developments, where the block is often identified with one building), but rather to the routes. For example, the analysis of the formation process of the *contrada* (a neighborhood developed around one route; from the Latin *contra*, in front of), in the case of row or pseudo-row house fabrics such as the ones in Venice mentioned above, replaces that of the block by using different reading criteria. The notion of enclosure may be applied to the aggregation along the two sides of a route, and to their pertinent areas defined by the secondary routes:

- main central route: a linear nodality consisting of a public open space between aggregations, which becomes the main central axis as geometric expression of motion; it is particularly evident in the case of planned fabrics;
- margins of the aggregate: linear anti-nodalities consisting of the external dividing lines, not necessarily straight, of the two pertinent strips (Caniggia, 1979, p. 171); the dividing lines are constituted by the boundaries between pertinent areas or by walls separating two rows of buildings pertaining to two different routes.

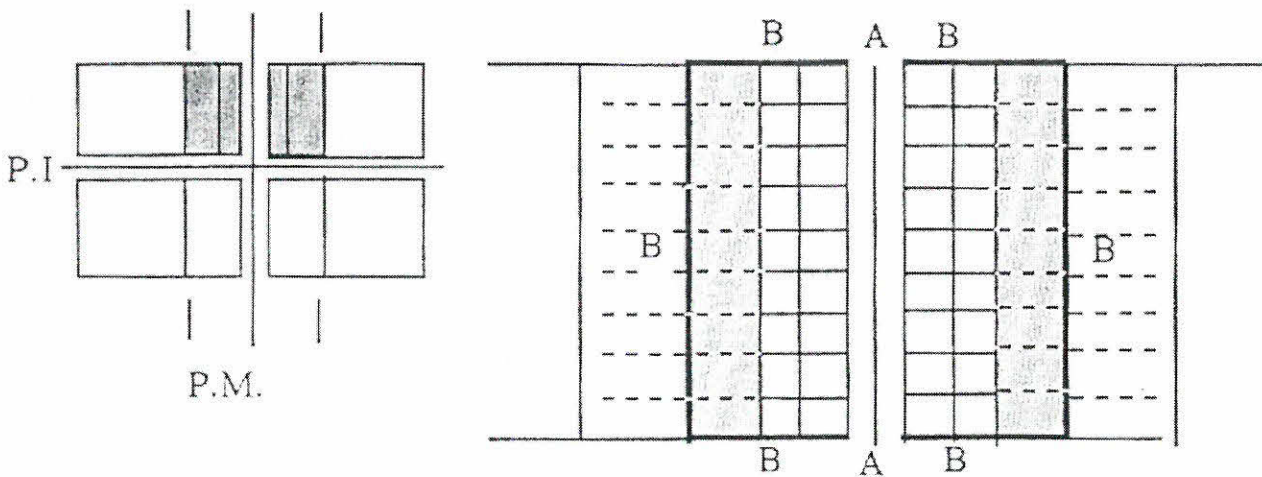
This scheme is generally valid for completely serial elementary fabrics in which buildings have not yet developed along the planned routes. In reality, the variants generated at the intersections between routes — starting encroachment processes, complicate the reading of the margins. However, it is useful to understand the analogy between base and special building, which adopts from the urban fabric the hierarchy of routes, the forms of aggregation of the rooms, and the base dimensions of the elementary cell. Special serial types are characterized by modular repetition of one room according to a transposition inside the building of a system of routes analogous to that one of the fabric<sup>9</sup>. During the transformation of the aggregate into the building, also the margins of the new enclosure are consequently transposed.

Let's take for instance the Roman or Florentine Renaissance palazzo. In these cases, not all rooms are actually identical: some are larger and devoted to reception and representation, while others are service rooms covering a less important position in the overall geometry. Process-wise, this type plays a



*A. Margins. B. Dividing lines. C. Centralizing axis. a, b. Different dimensions of serial band.*





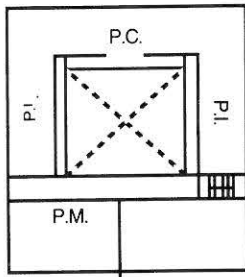
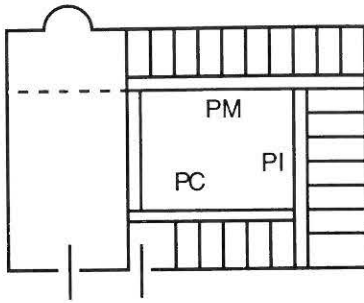
particular role in special serial building: for example, if compared to the convent type, which only derives directly from serial cells forming the fabric, the palazzo simultaneously comes from the specialization of base types and features transposed from the fabric. This explains, in brief, the difference in the layout of the two building types.

The palazzo is not only deriving from the fabric — from which it reverses the fundamental character and hierarchy of the routes within its interior distribution (where the main axis, starting at the entrance, acts as a matrix route, the orthogonal ones as planned routes, and the parallel ones as connecting routes) — but also from the base types consisting of both the domus<sup>10</sup> and the late medieval corte mercantile (merchant courtyard house), from which it derives by direct specialization or by the merging of different units<sup>11</sup>. In this regard, the palazzo's distribution can be considered as derived from the building aggregate, the structuring routes of which were made interior and private. Such process is exemplified by some types of Roman insula<sup>12</sup>, the interior stairways of which were directly accessed from the street (as in the houses in via del Tempio, Casa di Diana, and Casa dei Dipinti in Ostia), and the ground-floor and mezzanine were largely composed by autonomous special serial rooms organized along a route leading to an interior vertical distribution.

Even in its latest and more complex forms, the palazzo retains its original character of a serial repetition of rooms derived from the elementary cell. It develops into its mature, larger form when land-ownership policies change — which started in the middle of the 16th century in the main Italian cities — and allowing to join formerly separate row-house properties through their transformation into an enclosure layout.

The reversal of routes from the public to the private realm in the Florentine and Roman palazzo is perfectly legible in the larger examples, such as Palazzo Medici and Palazzo Farnese: the main route is polarized by the

*P.M.* - Matrix course; *P.I.*-  
Planned building course; *AA*-  
Centralizing nodal course; *B* -  
Dividing lines.



stairway, the secondary routes are comparable to the planned ones, and the final connecting route consists, in the Florentine palazzo, of the lounge and the ground-floor loggia (Caniggia, 1987).

However, the relationship with the fabric is often less evident because of the intrinsic continuity with the urban organism. Palazzo Lancellotti is a significant example of the complex relationship between new enclosure and base fabric laid out according to the ancient insulae. The site was occupied, presumably until the 4th century, by insulae along the via Lata axis (today's via dei Coronari). The palazzo was located on a nodal point at the intersection between via Lata and a street leading to a posterula of the walls along the Tiber river (today's via Arco di Parma). The average dimension of the insulae corresponded to the actus. The medieval row-house fabric formed along the centering routes of via Lata and the parallel route corresponding to today's via della Maschera d'Oro, as well as along the new internal route now corresponding to via dei Tre Archi and via Vecchierelli.

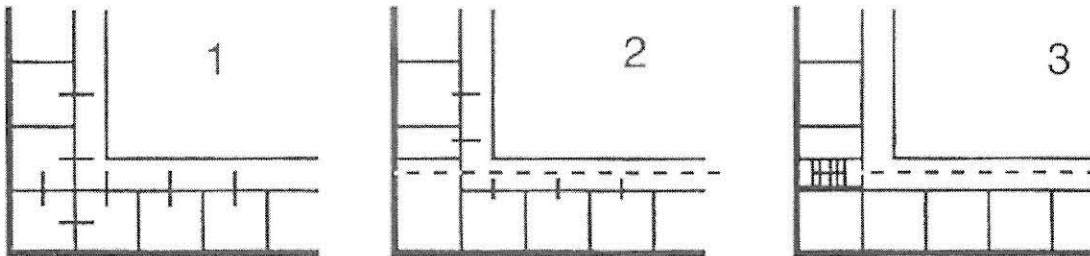
Construction began with the purchase and remodeling of houses on via dei Coronari by Mons. Scipione Lancellotti, and continued until the palazzo's court was completed. Only later the organism became asymmetrical for a further addition.

Surprisingly the orientation of the palazzo does not occur, as is usual, along the matrix route. However, considering the preexistent medieval enclosure-type structures and their medieval transformation, the interior routes may be read as the absorption within the organism of the dividing route (which through vicolo dei Tre Archi led to piazza Tor Sanguigna), which therefore maintains, both in base and special building, its complementary role with respect to the parallel routes. In Palazzo Lancellotti, this explains the formation of the single porticoed main route polarized by the large stairway, while the through-route continues towards Vicolo dei Matriciani. Falda's plan however shows the tendency towards the hierarchical formation of the typical routes at the piano nobile, despite the following variations. The facades show traces of the two typical phases of the transformation of the palazzi:

- a "fabric-like" behavior, still legible on the side facade (the ground floor of which is still occupied by shops) and, on the left-hand half of the front facade by presence of the typical inter-axis deriving from the opening of two windows in each room;
- a "design-like" behavior, with typical regular inter-axis also continuing in the extension.

One aspect of the close link between fabric and building is that during the serial repetition of rooms (or of cells), exceptional solutions always occur at the nodes; it is there that the series of rooms is interrupted or rotated in correspondence to the building's sides, just like a node generates a variant in the urban fabric. In the case of Palazzo Lancellotti, the nodal room and the corner variant coincide, being one directly derived from the other.

In general, the corner variant is one of the recurrent issues linked to the

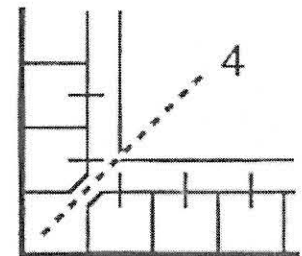


notion of enclosure. Their different solutions are indications of the building's levels of seriality and organicity, and of the builder's intentions and final choices, thus documenting his different degrees of critical conscience during the act of building; thus they are the legible traces of the organism's genesis. In traditional construction, but often also in buildings designed by the architect's critical conscience (think, for example, of special nodal rooms in buildings such as Palladio's Palazzo Thiene), the serial spaces are organized in a way that is very similar to the ones generated by the routes in the urban fabric: at the corner, exceptional position within the fabric, a "base type" variant is produced according to the degree of anti-nodal importance of the intersection between routes.

The convent is another significant example of the relationship between special serial building and the notions of fabric and enclosure. The monastery was originated in Europe as a true spontaneous fabric in the 4th-5th century, coinciding with the formation of the first monastic communities: like row units, it was generated as an aggregation of formerly autonomous cells.

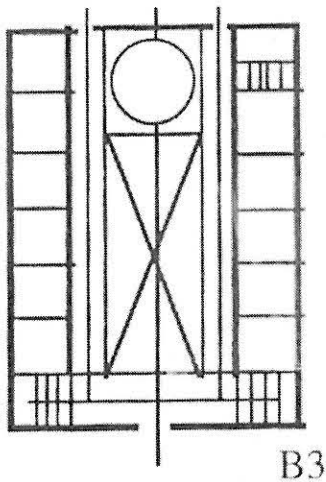
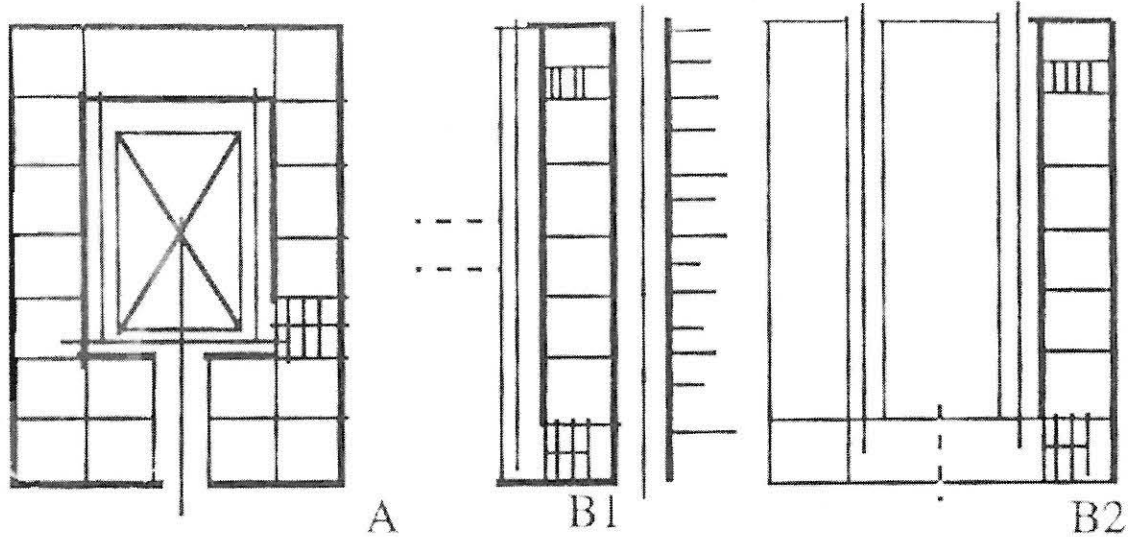
The series of rooms composing the organism are organized starting from the first emplacement, which formed along the route beginning at the entrance to the church's presbyter. As in urban fabrics, this route acts as matrix for a subsequent planned route along which a new series of modular cells will then be organized. The following route concludes the enclosure, forming the cloister and finally establishing the access to the organism tangent to the dividing line separating the nodal organism from the church. Within a broader typological process, we can consider the convent serial type as another matrix of a series of modern special building types. Schools, especially universities, are very clear examples of such a process, furthermore demonstrating how the notion of utilitas derived from the concept of type reaches far beyond the mere correspondence between function and type.

In Rome, the indirect reuse of both convent and palazzo types for higher education is self-explanatory. The ancient university - the Collegio della Sapienza on today's Corso Rinascimento - consists of an enclosure-type



*Graphic examples of the need for the variant in nodal rooms in serial specialized building. 1 - Specialization due to lack of opening onto the course; 2 - Specialization by increase in size; 3 - Specialization polarized by the stairs; 4 - Specialization by direct access of the corner room from the course.*





A - Reversing of the courses in the Roman type of palazzo; B - Example of reversing process of the courses (Collegio della Sapienza in Rome): B1 formation of the internal course polarized by the two staircases; B2 formation of the enclosure, doubling of the course and formation of the orthogonal course; B3 conclusion and formation of the nodal chapel of S.Ivo.

structure strongly developed along the main axis, as well as organized along porticoed routes facing the yard, with the S. Ivo church located in axial position. The direct origin of such organism from base building seems to be confirmed by Pope Eugene IV's wish that "the schools all be reunited, and (...) that they be gathered in the S. Eustachio quarter"<sup>13</sup>. This was achieved by acquiring houses near the S. Fortunato church in an anti-nodal position with respect to the fabric (Campo Marzio was still almost uninhabited at the time), thus allowing to develop a large structure. It seems that the first educational facilities directly reused those very houses; the first special building, built at the end of the 15th century, is composed by a number of rooms as multiples of the elementary cell along via de' Sediari, and aggregated according to the serial logic of the base fabric<sup>14</sup>. The fundamental typological difference distinguishing the new structure from the residential fabric is the position of the distribution route: parallel to via de' Sediari, yet inside the organism, it is polarized by two stairways continuing the route on the upper floor, and is contiguous to open spaces that will later merge to form the enclosure of the following building. Therefore, it is the fabric and its aggregation principles that generate special structures through a process typical of all special serial buildings: the fabric's routes are reversed within the special serial organism, determining its formation and evolution process.

When it was decided to expand and unify the organism, the new interventions were designed on the basis of the precedents of the convent and the Roman palazzo<sup>15</sup>, which had been recursively developed and transformed over time: the two original yards were joined by the demolition of a wing orthogonal to via de' Sediari; a new building was constructed symmetrical to the existing one, thus creating, due to the polarizing position



of the stairway, a route parallel to the main external route that introduced hierarchy in the system; the new centering axis was established in order to unify the entire organism, transforming the "fabric-like" aggregation into one single building, accompanied by the erection of the St. Ivo church and the remodeling of the external routes. The new enclosure, by establishing a perimetral dividing line, rectified the direction of the adjacent via de' Staderari into the new diagonal trajectory later maintained by the following building of Palazzo Carpegna and Palazzo Madama. Due to their large size (four elementary cells), each room specialized itself by establishing its own centering axis, as indicated by the triplication of the portico's spans corresponding to the cell, which allowed a widening along the axis. The organism may now be considered as a special fabric.

The building's character is legible from the outside through the indication of the portal-church axis on the front, and the two axes of the longitudinal routes of Piazza S. Eustachio; the side facades keep their original aspect indicating the serial layout of rooms through the windows' binary module, which survived the several transformations although progressively unified starting from the first series on via de' Sediari. Notice in this regard how the architects' drawings also show a process of design shifts parallel to construction, by passing from strongly serial types (in Giacomo della Porta's project, the rooms of the two series along the two porticoed routes are absolutely equal), to their greater specialization and hierarchization. This process should have ended by reinforcing both ends of the parallel longitudinal routes through the opening of two lateral portals that were never built (Mastroianni, 1989). Notice also the first formation of a very simple special building along a single route, and how its repetition generated the serial organism through the joining of the two parallel routes to the one linking the two stairways to form a new axis: such evolution stands as further proof of the procedural continuity among special serial types (i.e., the formative role of the stoa in Greek cities). The final phases of construction are accompanied by a remodeling of the surrounding urban fabric, consequently shifting the urban role of the building from anti-nodal to nodal.

The mutual relationship and exchange between base building and special building is rather complex and often not behaving according to a linear process. The constant exchanges between residential and sacred architecture exemplify the problem at hand: in Christian architecture, the first worship gatherings originated and established themselves in private houses at least until Constantine's edict of 313.

Hence the special building for Christian liturgy originated from a simple reuse of the dwelling. Developing its own specific building types according to Roman construction techniques, Christian liturgy reinterpreted and varied the original types according to necessity (compare, for instance, the structure of the domus with that of the early Christian church, where aisles and transept obviously coincide), nevertheless the axiality and nodality based

on the notion of enclosure, deriving both from the basilica and the domus, were still reconstructed.

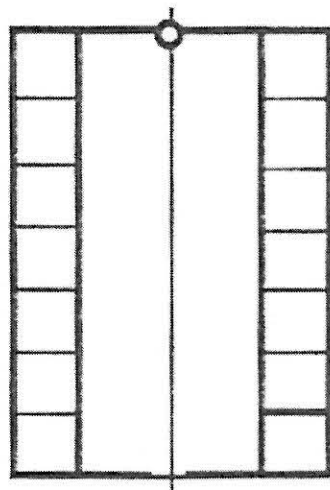
Although special nodal buildings are serially organized, their contiguous rooms are linked together by a relationship based on necessity which cannot be disjointed from the type's organic behavior. As an example of the greater degree of organicity of special nodal buildings, let's consider a church in which the serial spaces are contiguous to the central nave. The latter in turn is:

- from the structural viewpoint, the part of the building to be supported, the load of which is partially born by the subordinate serial rooms;
- from the distributive viewpoint, the "served" room, while the serial spaces function as servers;
- from the spatial viewpoint, the "nodal" room, the space where the builder's expressive and symbolic intention is fully expressed, and the character of which is enhanced by the serial spaces to its sides.

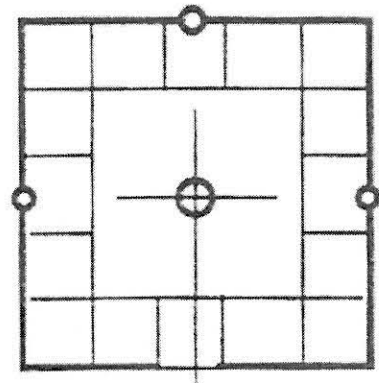
Special polar buildings feature an even greater organic character, due to the fact that eventual series of peripheral rooms are organized according to the pole in two or more equivalent directions.

We have already mentioned the formation of the nodal space in Roman special building as an organic evolution starting from serial organisms. Such phenomenon - cyclic rather than linear - is common to even quite different cultural areas: in Islamic typological processes (especially the ones pertaining to the madrasa and the mosque), the open space within the enclosure is progressively transformed into an organic vaulted space of the mature (but not necessarily subsequent) types, thus changing the axiality and nodality of the matrix types.

A critical factor resides in the observation of the continuous exchange between the two terms of the dyad during the typological process: between serial organisms organized around an open space (cloister, patio, court, yard),



A

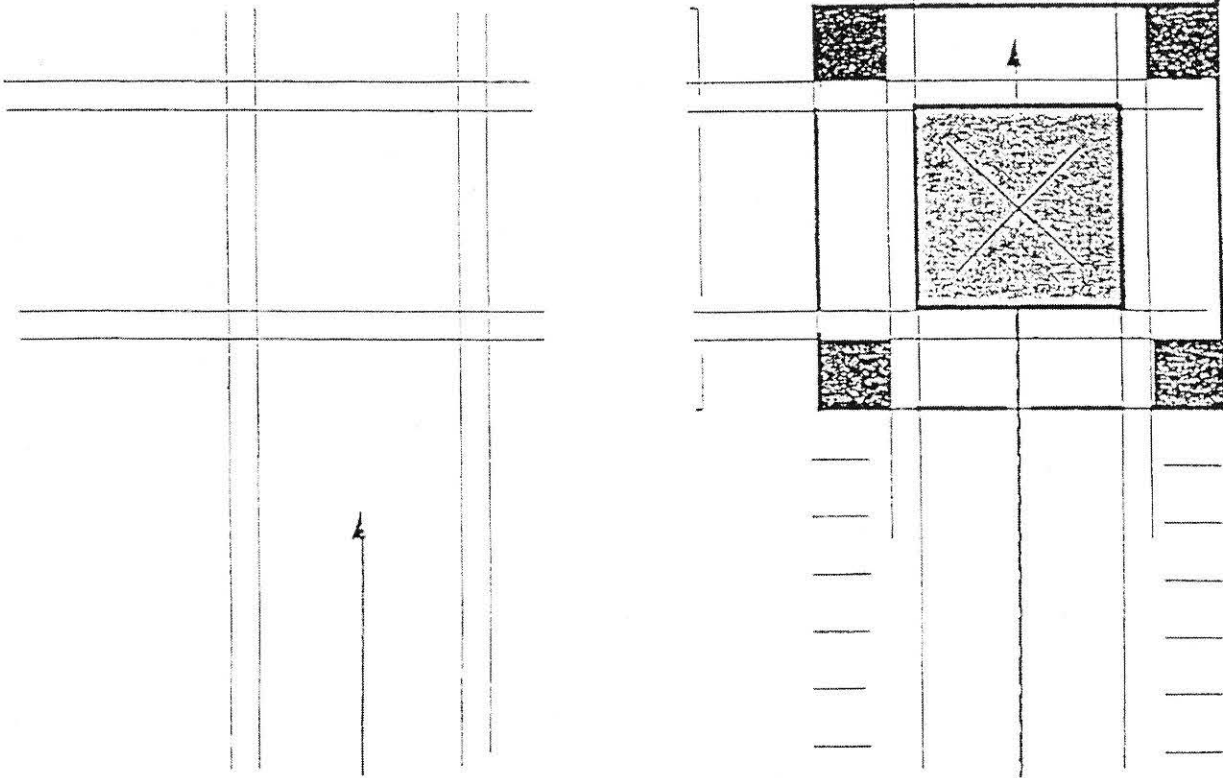


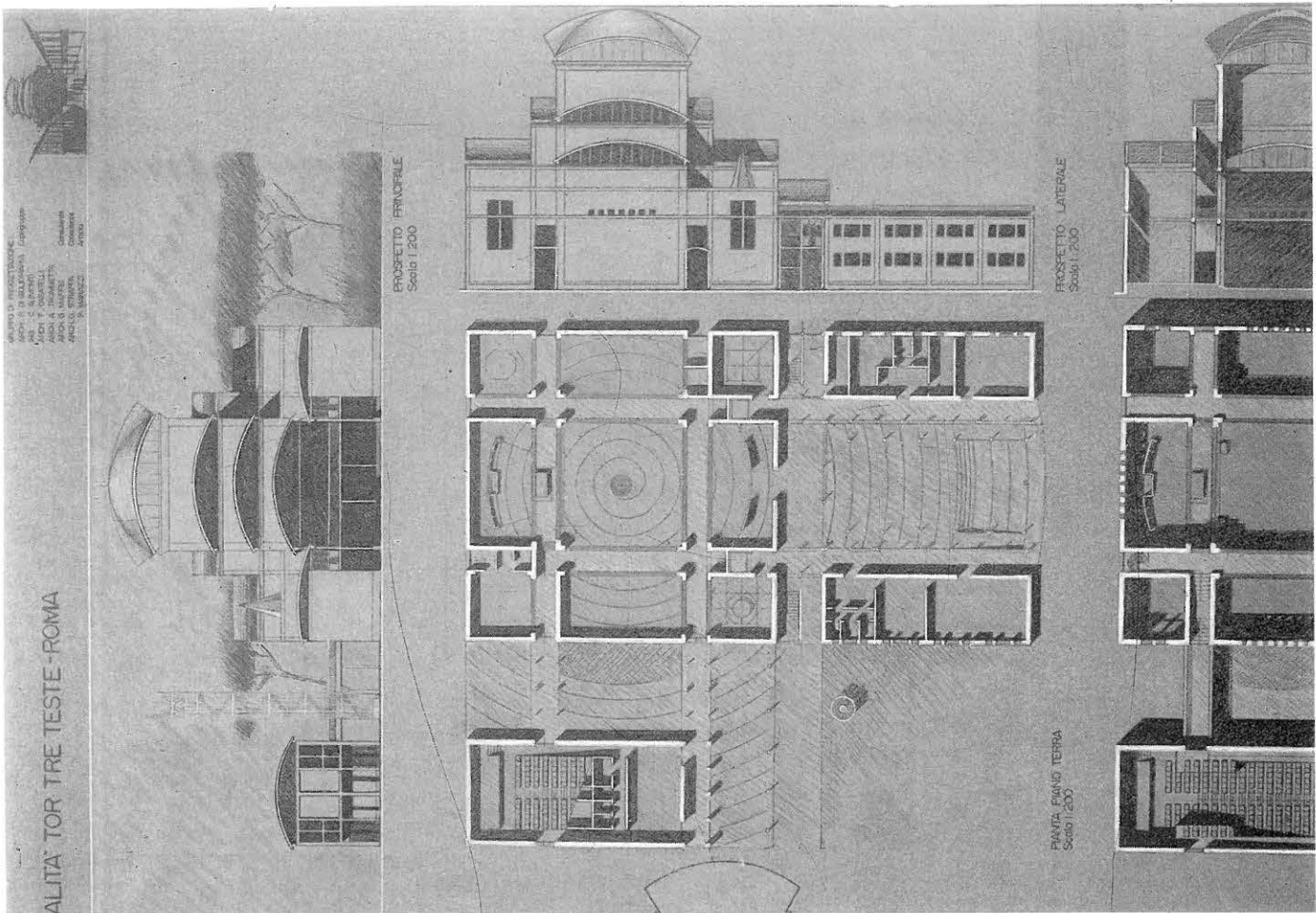
B

A- Special nodal type;  
B- Special polar type.

and nodal or polar buildings in which the repeatable series of elements (rooms, regular spans) are organized around an interior space dominating the spatial hierarchy.

In the building stratification produced by the Roman world, it is possible to retrieve evidence of typological as well as physical continuity between serial and nodal structures, through the transformation of ancient serial structures (base or special) into special nodal types. This confirms, among other facts, how the typological process not only develops through diachronic mutations of the type (identified by buildings), but also by transformations of the very architectural structures over time. Consider, for example, the formation of the San Clemente Basilica in Rome: on top of the original 1st-century BC structures—a special serial type with approximately six-meters deep monocellular rooms organized around a central court — an early Christian basilica was developed at the end of the 4th century, transforming the courtyard<sup>16</sup> into the nodal space of the assembly; the reuse of the ancient serial structures of the peripheral rooms created new serial structures forming the aisles, hence directly inheriting the module of the first ancient elementary cell. Notice how the geometric principle regulating the ancient serial transformations is transposed to the new buildings: the courtyard's axially, confirmed by the longitudinal layout of the larger rooms (which in the preexisting insulae determined the position of the mithraeum), also determines the analogous position of the early-Christian semicircular





*A competition for the peripheral area of Tor Tre Teste in Rome by Giuseppe Strappa and others. Section.*

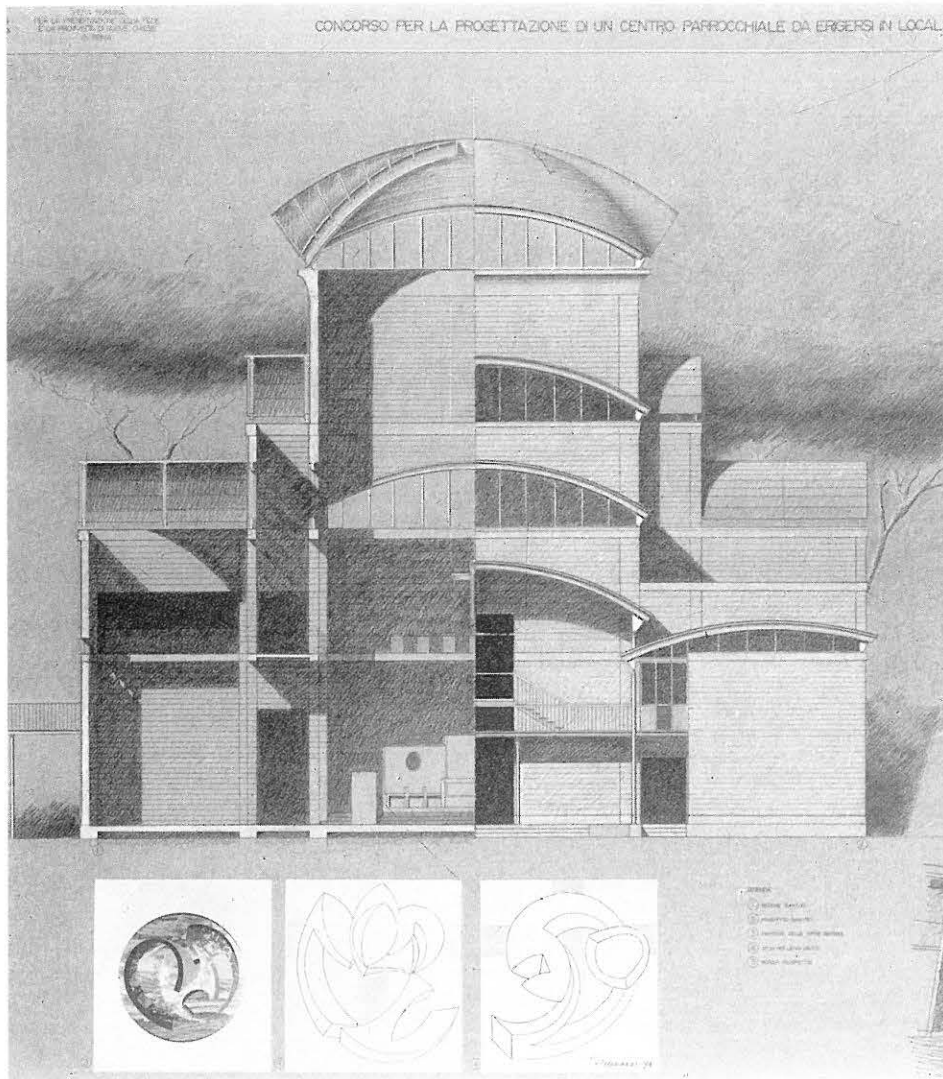
apse<sup>17</sup>. The present day's stairway, as well as the 15th century tombs, retain their anti-nodal position with respect to the ancient structure.

The correspondence of node and courtyard recurs in those cases in which the size of the ancient type is compatible to the new function. When this condition is lacking, nevertheless the adaptation behaves as far as possible according to the original formative matrixes. In the case of the Basilica of S. Lorenzo in Lucina, built over a 3rd-century insula, the preexisting structure conditioned the modular dimensions of the aisles (reusing the dimensions of the insula cell) and of the nodal room (using two cells as module).

To conclude, I would like to illustrate how the aforementioned reading criteria can be applied to the design of a complex special organism: a church and a parochial center designed last year for a design competition for the peripheral area of Tor Tre Teste in Rome. The project was done in collaboration with Gianluigi Maffei, Tiziana Casatelli, Paola Di Giuliomaria, and Amedeo Trombetta.

The suburbs can be considered as a set of dispersed buildings lacking those characteristics which make the city an expression of civilization, the city as carrier of the fundamental notions of aggregate (solidarity and complementarity among elements) and organism (relationship based on a shared necessity among the parts).





*A competition for the peripheral area of Tor Tre Teste in Rome by Giuseppe Strappa and others. Plan.*

The project proposes to re-stitch the chaotic layout of the suburbs. The parochial complex was designed as continuation of the surrounding urban fabric, mediated by complementary structures (open public spaces, the priest's house, the meeting hall, etc.), and generated as the most coherent prolongation of the serial fabric to create the node represented by the sacred space. As for the relationship with the context, we attempted to reconstruct the hierarchy among the parts by assigning specific roles to urban spaces and building types. The project area is individuated by the axis of via Francesco Tovaglieri (a potentially "reaching" and not "passing" route, polarized at the other end by a commercial area) which comes from a high-density residential nucleus. At present, the church project-area is an anti-nodal space. We enhanced its potential polar role by choosing a strong polar type generated by the routes of the serial aggregation. Our intention was to make the meaning of the novel urban space legible through the polarity of its design.

The technical solutions are based on the use of static systems (vaults and masonry walls), spatial systems (the great node underlined by the higher cross-vault, the subordinated spaces covered by barrel vaults, the serial spaces sewing the fabric together and unified by a curvilinear roof), and

construction systems (metal roofs, pre-cast concrete block masonry), to bring out the aggregation logic of the serial spaces forming the four-side portico entrance, and the nodal rooms of the central-plan church.

The nodal space for worship is generated by the intersection of the double routes (coming from the four-side portico and the meeting hall), thus establishing a hierarchical order in the structure (four pillars, one at each corner, specializing in elevation).

The node formed by the route intersection is reinforced by the symbolic shape of the roof: the crossed-vault — structural node generated by the intersection of two barrel vaults - is meant to be expression of the organism's unity through one single building action.

The nodal sacred space is also reinforced by its elevated routes, memory of the ancient women galleries (*matronei*) and functional link among the different secondary spaces. Movement and stillness generate the space of the ritual and architectural node:

- the main route axis, coming from the urban nucleus, is symbolically concluded in the altar, and simultaneously hierarchizes the four main generating lines of the organism;

- the main architectural pole, center of the sacred space, is reinforced by the oculus in the covering and the marquetry in polychromatic marbles at the center of the floor;

- the anti-nodal axes, consisting of the four through-routes coming from the outside and, more peripherally, of the generating lines of the external masonry walls (margins), enclose the sacred space.

- the large anti-nodal rooms identify special spaces that are complementary, although functionally different, to the large assembly space:

- a. the chapel, to the right of the main altar;

- b. the vestry, to the left of the presbytery;

- c. the baptistery, facing the open-air square, and lit by a steel and glass pyramid;

- d. the assembly room.

As in the formative process of all religious buildings, this church stems from the idea of the sacred space generated by the notion of enclosure. Movement and ritual coincide with the order of the architectural elements.

I hope this project shows how we tried to transpose into design the reading of inherited types by deriving generating principles and not mechanical models, and how its architectural language is generated from contemporary techniques and the building's symbolic function, and not from inertial imitations of history.

## NOTES

<sup>1</sup> Caniggia-Maffei, 1979, pp. 131 and 175. For the general definition, see also pp. 169 ff., pp. 182 ff.; for the more technical definition, see Caniggia-Maffei, 1984, p. 154.

<sup>2</sup> Maretto, p. 121.

<sup>3</sup> Caniggia-Maffei, 1979, p. 131.

<sup>4</sup> In reality, the polar axis is not an axis by definition — for it does not represent a geometrization of spontaneous motion — but is rather a geometrical element introduced by the constructor's critical intention to organize the aggregates layout forming the tectonic node. Thus, the polar axis marks the conflict between the space generated by the building's real life - the structuring spontaneous motion — and the space generated by construction necessities or by novel functional needs. At the end, one of the organism's axes results inevitably polarized not only by the pole identified by the polar axis, but at least also by the entrance pole.

<sup>5</sup> "Form" is here intended as the visible (real or conventional) appearance of a structure.

<sup>6</sup> More rarely, traditional serial buildings, especially those less characterized by residential use, or those at their first formation phases, develop along a central route (sometimes doubled with the specialization of the rooms towards the interior) leading to the serial rooms.

<sup>7</sup> E. Dyggve, *Ravennatum Palatium Sacrum*, Copenhagen: 1941, quoted in L. Crema, *L'Architettura Romana*, *Enciclopedia Classica*, III, *Archeologia e Storia dell'arte classica*, vol. XII, tomo I, p. 613. Similar solutions seem to have also applied to the imperial palaces of Constantinopolis and Antiochia, strated by Galenus and terminated by Diocletian.

<sup>8</sup> Understanding the type formation process reveals the inconsistency of much design that claims its reference to traditional types on the basis of simple masonry structure. In terms of correspondence between type, organism, and legibility, Ignazio Gardella's work on the Zattere (1954-1958), praised for the sensitivity with which he inserted a modern design in Venice, shows an essentially imitative attitude rather than a contribution to the continuous evolution of the context.

<sup>9</sup> Serial special types, on the basis of all of the above, are characterized by modular repetition or by a hierarchization behaving according to specialization processes similar to those of urban aggregates: variants at the nodes, nodality and anti-nodality, derive from the position of the aggregated rooms both reciprocally and with respect to the route axes.

<sup>10</sup> See Guido Calza 1923-24, vol. 1. The distinction between the terms *domus* and *insula* was not, after all, as clear-cut as one may think, since their meaning most probably included also the notion of derivation of one type from the other and of specialization of types derived from the *domus* and from the *insula*. As Lugli remarks (Giuseppe Lugli, "Il valore topografico e giuridico della *insula* in Roma antica," in *Rendiconti della Pontificia Accademia di Archeologia*, ser. 3, vol. 18, 1941-42, pp. 191-208) in listing the damage wrought by Nero's fire, Tacitus includes in the terms *domus*, *insula*, and *templa* (Tacitus, *Annales* 15.41) all of the city's buildings: not only the residential ones, but also those specialized as schools, offices, etc., thus further confirming the close procedural relationship between basic and special building. Notice also that in reality the *palazzo*, at least in the type of the large Roman Renaissance buildings, is not precisely a single-family building type,

being often based on the aggregation of several apartments, while the domus is a common house also featuring rooms for the servants.

The apartment is actually clearly recognizable as an autonomous residential unit within the palazzo for featuring its own distribution, independent of the main one, leading to the sequence of interconnected rooms that, starting from the stairway, are distinguished in: footmen's room, first antechamber (possibly with a chapel), second antechamber, reception hall, chamber, rear-chamber, and bathroom. The size and composition of such sequence varies synchronically according to the importance of its inhabitant, and diachronically according to the trend of the time (i.e., beginning with the 16th century type, to increase the number of rooms in the 17th and 18th centuries (see Patricia Waddy, 1990).

<sup>11</sup> The initial formation of the palazzo, in its clearer and more legible form (and to be considered as the typological character to be found in following organisms) occurs through the increment of the elementary rooms (as for example in Palazzo Davanzati), with the ensuing loss of a direct relationship between external legibility and interior organization (formation of the "rhythmic wall" with equal piercing and interaxes; see Gianfranco Caniggia, 1990, p. 192).

<sup>12</sup> Especially through the transformation of the "insulized" domus in the multi-family organization based on the original substrate type.

<sup>13</sup> Gemma Pisceddu, 1989, p. 75.

<sup>14</sup> (Heinrich Thelen, Muenchen, 1961)

<sup>15</sup> The convent-related origin of special academic structures can also be observed in the Roman area in the reuse of the convents' scholae once belonging to the mendicant orders:

- the Franciscans, with a studium in the Aracoeli convent which will be transformed into a university at the beginning of the 15th century, later transferred to the SS. Apostoli convent in 1463;

- the Augustinians, with a studium generale in the S. Agostino convents since the 14th century, and an important public cultural center in the S. Maria del Popolo convent;

- the Dominicans, with the S. Maria sopra Minerva convent, the most renowned teachers of which also taught at La Sapienza.

Furthermore, there were at least two colleges at:

- Palazzo Capranica (Collegio Capranica, introductory to theological studies), built around the middle of the 15th century by reusing preexistent portions of the fabric;

- Palazzo Nardini (today's Palazzo del Governo Vecchio), built in the second half of the 15th century.

<sup>16</sup> Although this space has not been excavated yet, several traces suggest the presence of an open space pertaining to the building located on the insula, possibly used by the mint.

<sup>17</sup> Today this continuity is legible only in the lower level of the basilica: the present day's apse is well out of axis compared to the early Christian building (which perfectly coincided with the position of the ancient structures) due to its rebuilding at the beginning of the 12th century; see Giuseppe Strappa, 1995, p.127 and 242.



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*Serge Santelli*

## **The Central Space in North African Architecture**

from the Medina to the Suburban Settlement

In North Africa it is always surprising to acknowledge the differences between official architecture—which is designed by architects and built by recognized contactors—and the “self-help” housing designed and built by the people themselves. The first, which includes all the major public buildings (administrative and office buildings and hotels) and large housing complexes for the middle and upper classes, refer to modern building types which express the progressive aspect of contemporary Arab architecture.

In Tunisia the majority of the new buildings—and especially the numerous hotels which have been built along the sea coast in recent years—are designed according to modern European standards. However, their outdoor and indoor decoration refer explicitly to a traditional Islamic architectural language: Arab arcades, green ceramic tiles, cupolas, and vaults, wooden bow windows give a picturesque oriental aspect to the buildings.

In Morocco, where the modern tradition in architecture is very significant, royal demands to increase both knowledge and imitation of traditional Islamic Moroccan architecture has had a strong influence on contemporary buildings. The Hasan II mosque, for example, shows a strong influence of the traditional aesthetic and ornamental Moroccan design. However, the reference to Islamic tradition in the design of contemporary buildings remains superficial and functions very much as decor stuck onto a Western structure.

In contrast, “self-help” housing settlements follow a specific typological process. Here, the reference to Moroccan traditions is not reduced to an ornamental language which decorates the architect’s buildings, but is connected more deeply to the traditional building process. Architects and engineers have little to do with the design and construction of this popular housing. Nevertheless, these structures must be precisely analyzed if one is to understand contemporary building processes in North Africa.

### **The Central Space of the Traditional House**

The traditional Arab house has been thoroughly studied by numerous European and Arab scholars. All have emphasized three main characteristics: (1) the house is built around a central outdoor courtyard; the rooms are lighted by windows that open exclusively onto this central



Figure 1. The gourbiville of  
Saida Manoubia, Tunis.  
Partial Plan.



courtyard; (2) the rooms are long and narrow and access to each room is from the courtyard only: there are no interconnecting doors between the rooms; (3) the most important room is situated furthest from the street and the service area is located close to the entrance. The house has no windows opening onto the street or any other public space. This results in the house having a blank outside facade with blind street walls in which only doors appear. The street is defined by continuous, plain walls, which make it difficult to read and identify each residential unit. All the buildings are attached and the urban texture is one continuous physical structure. Detached buildings do not exist in the medina. The mosque and all other religious buildings are part of one urban continuous urban fabric in which the buildings merge.

Houses are built by the owner with the help of local craftsmen. The plan is laid out on site, according to accepted and reproducible architectural standards and technical conventions. Everyone—rich or poor—has the same typical centralized house, and the urban house built in the medina has a structure similar to a rural one. The traditional plan is very old and has dominated for many centuries without major change until recent times.

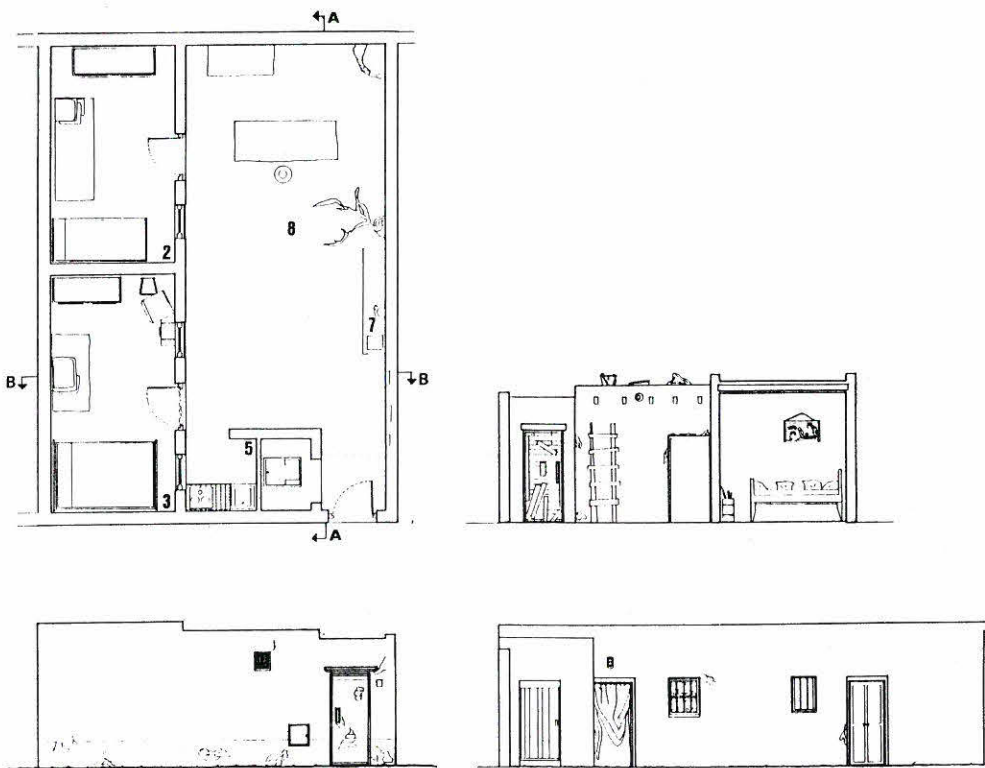


Figure 2. A house in Saida Manoubia, Tunis.

## The Arabic Facade of the Nineteenth-Century New Towns

The architectural and urban patterns introduced by European settlers and the French administration at the end the nineteen century completely transformed the traditional urban landscape in North Africa. New towns were built with their new architectural types—public as well as private—fronting the existing medinas. The architectural conventions were diametrically opposite to the traditional ones. The buildings were built along large boulevards or streets with front façades, which established strong connections between the built structure and the public space. The design of the public space, the street, the square, or the boulevard determined public or private buildings. The façades, with their ordered composition, their balconies and classical, monumental ornament, created a significant public space, which expressed the European colonial culture. The apartment buildings in the center of the city were contiguous, but the favorite residential types—detached villas—were isolated and disconnected elements built in the middle of private suburban gardens. The public buildings themselves, especially the major monuments, were lonely built structures composed in a colonial grid pattern. Thus the new European city and its buildings were in complete opposition to the traditional Islamic medina.

Figure 3. A house in Ettadhamen settlement, Tunis.

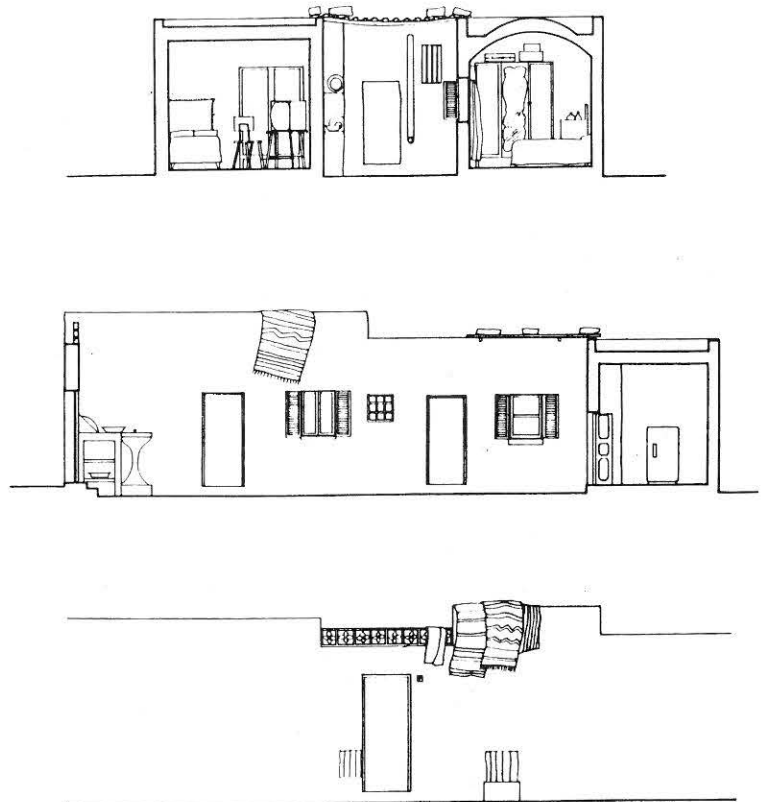
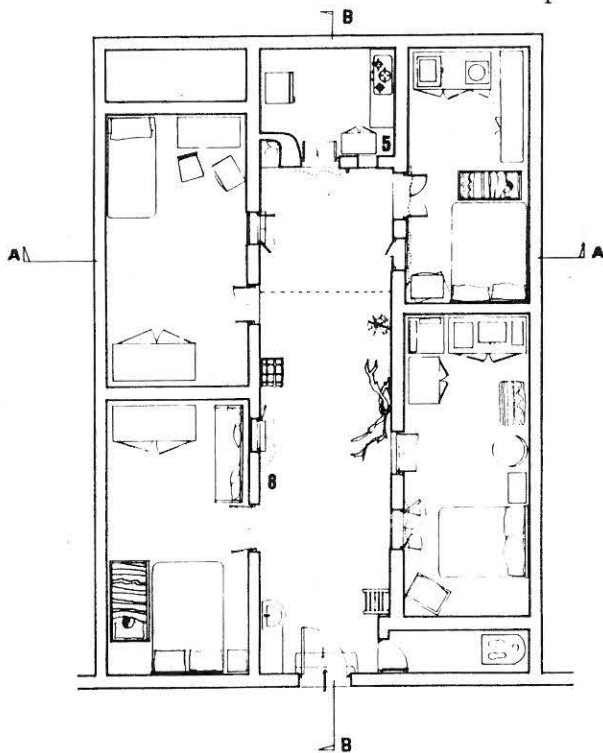
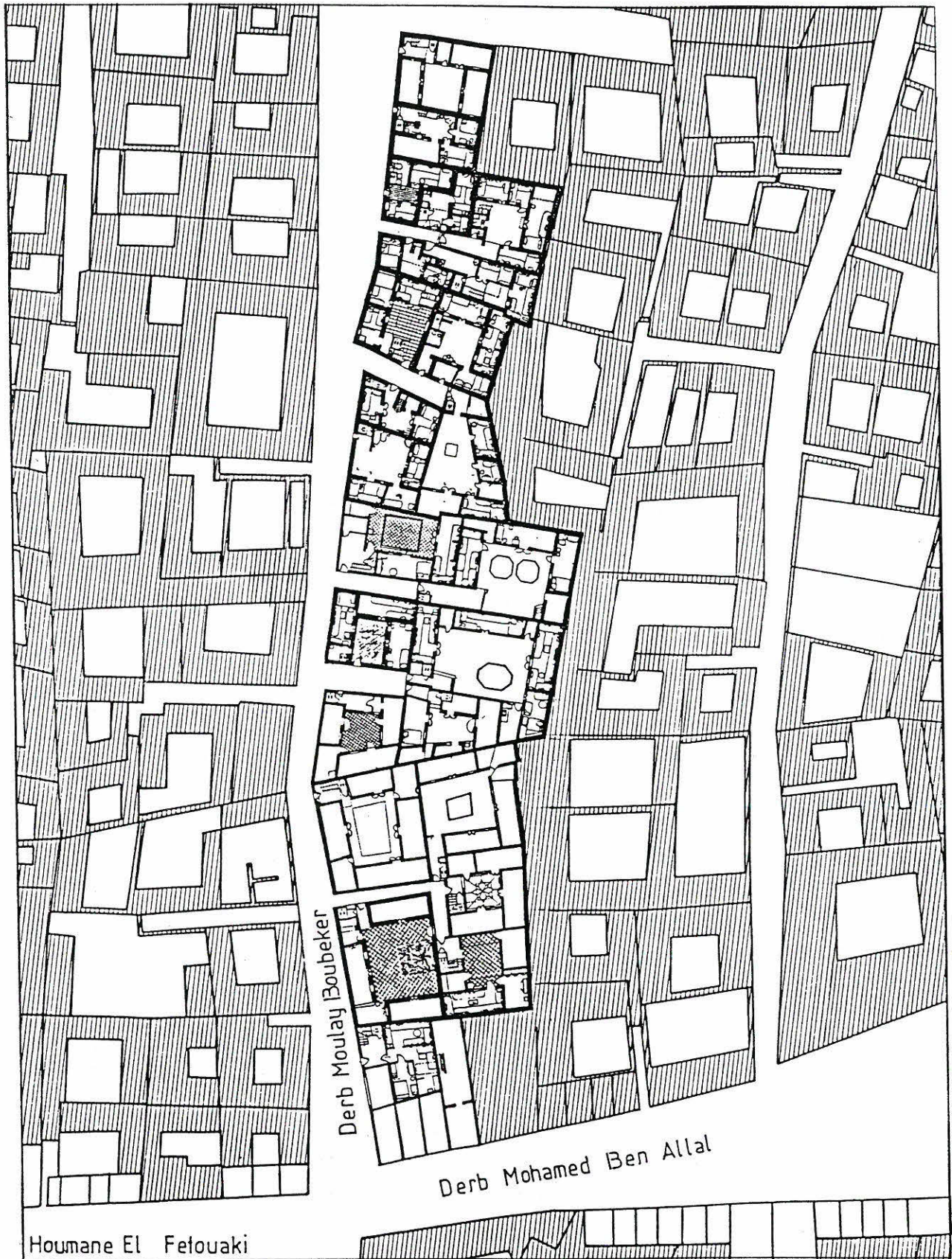


Figure 4 (opposite page).  
Houses along a street, Dour  
Sidi Youssef Ben Ali,  
Marrakech, Morocco.





Houmane El Fetouaki

Derb Moulay Boubeker

Derb Mohamed Ben Allal

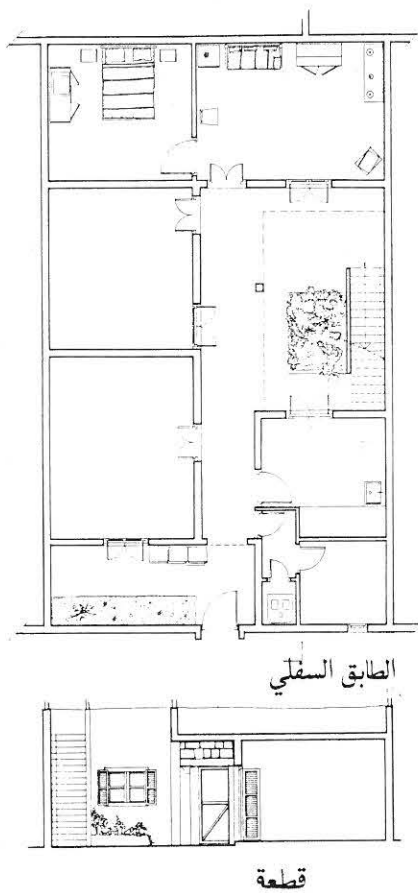


Figure 5 (above). A house in Ettadhamen settlement, Tunis.

In the beginning of the colonial period, the new buildings were designed according to contemporary European architectural patterns. Most of their facades refer to the classical Western language of the Beaux Arts style in vogue at that time (most of the architects were French and many contractors were Italian). After years of classical dominance, a few architects, influenced by an exotic or oriental attitude, began to introduce Islamic ornament on the facades of their buildings. In Tunis the government buildings, built close to the Casbah, as well as some private buildings, such as banks and houses, have facades decorated with traditional Tunisian ornaments. In Rabat, Casablanca, and Algiers, the facades of the main public buildings mix both modern and traditional motifs. Although their spatial structure remains primarily Western, their front elevations were covered with traditional Arabic elements. Thus, there was a significant dichotomy in these colonial buildings: European in the layout of the internal spaces; they were Arabic on their exterior facades. This characteristic is very specific to the design of the new towns, and it demonstrates how French planners were able to integrate these new towns into the local cultural fabric.

Built outside the medina and the new towns, contemporary or later "self-help" settlements that house the native people provided the Arab component of the modern city. The analysis of these settlements built in the suburban zones of North African cities just before and after the Second World War shows a very specific phenomenon. Designed and built by people without the help of architect or professional contractor, these new popular neighborhoods follow the traditional Islamic way of building.

### The First Generation

Massive migration of rural populations into the cities and the development of squatter settlements in leftover peripheral zones were important developments after the Second World War. These *bidonvilles* (shantytowns) and *gourbivilles* (rural settlements on the urban fringe) were first built with natural materials (such as earth) reproducing the rural model, or with materials such as pieces of sheet metal or wood for temporary illegal structures. Fleeing the countryside, the rural population built, south of Marrakech, Sidi Youssef Ben Ali, a self-help settlement which after the Second World War became the largest *douar* in Morocco. With its main commercial street, residential alleys, mosques, and hammams, the settlement works like a large village. Its architectural and urban structure is similar to that of a medina. Parallel narrow streets give access to the houses, which open onto interior courtyards. The walls that face the public space are devoid of windows. Built completely of earth, the *douar* is similar to a *r'bat* (the traditional suburban settlements built on the outskirts of the medina during the pre-colonial period). It uses the same building process, the same urban structure, and the same house configuration. In Casablanca and Rabat large

Figure 6 (opposite page). Plans of three houses in Douar El Hajja, Rabat.



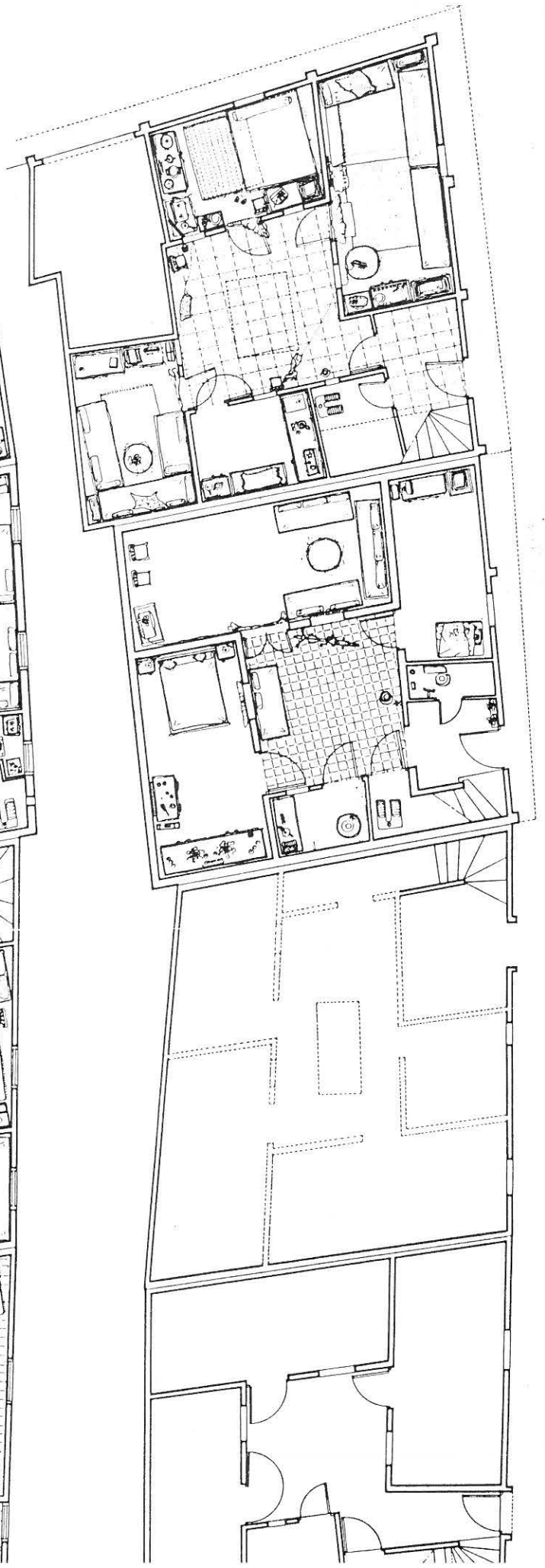
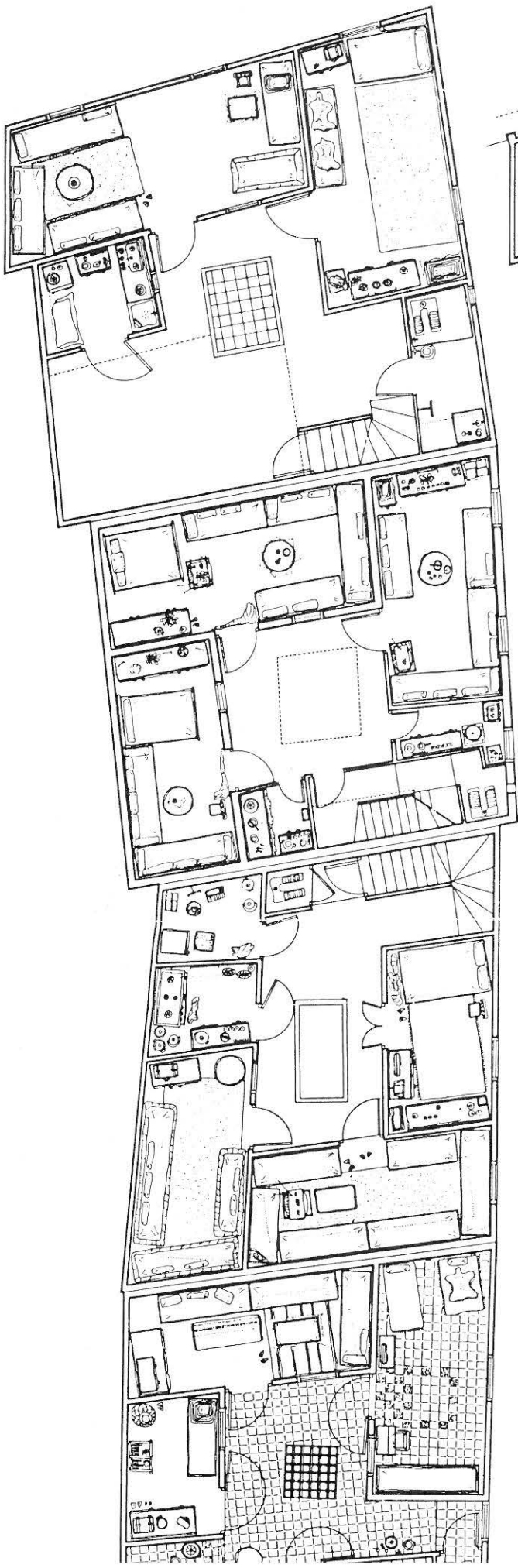




Figure 7. Section and street facade of houses, Douar El Hajja, Rabat.

*bidonvilles* expanded their fragile structures into peripheral zones close to the industrial areas. In Tunis, zones on the city's outskirts were covered with *gourbivilles*.

After a few years, as the social and financial status of the family improved, the original houses were rebuilt with permanent materials, that is, earth and sheet metal were replaced with cement blocks and concrete beams: terraces took the place of the old roofs. Their rural or squatted appearance completely disappeared and they were transformed into an ordinary traditional *r'bat* of a suburban neighborhood. Nothing now differentiates a traditional district of the medina from these contemporary settlements recently established in leftover urban spaces. The urban architectural type has been reproduced in its entirety.

### The Second Generation

In the seventies, the medinas and their new suburbs became dense and saturated, creating the opportunity for their inhabitants, an emerging urban middle class, to build their new houses in more peripheral areas. The

builders who build their own homes are the legal owners of the plot they built it on. They use permanent materials, such as cement block and reinforced concrete. With their public services (such as mosques and hammams) and their commercial thoroughfare, these new urban settlements function as small cities. In Tunis, the Ettadhamen *cit  populair*e had more than 60,000 inhabitants in 1980; in Rabat, the *douar* Hajja also had 60,000 inhabitants.

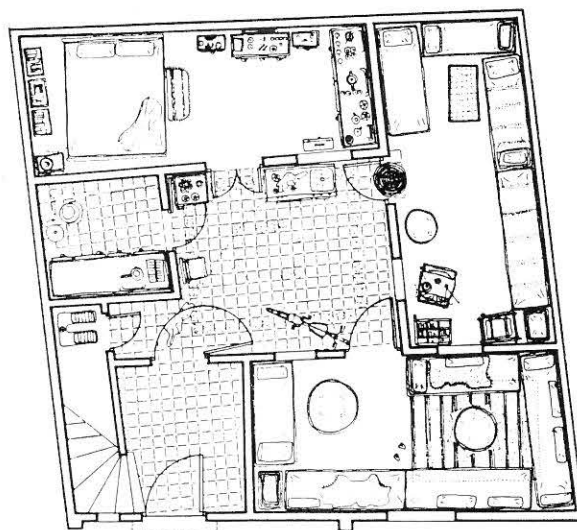
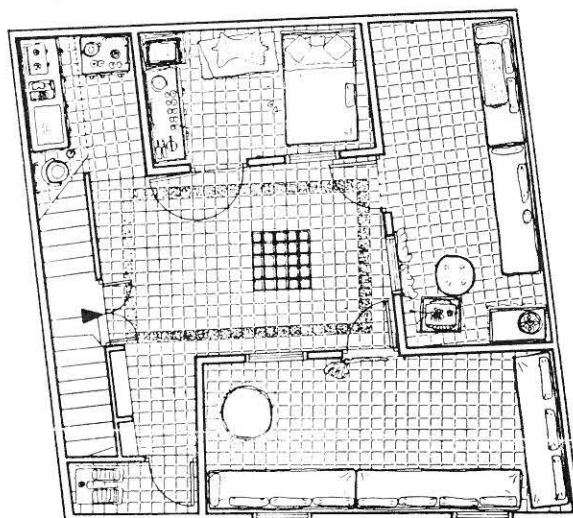
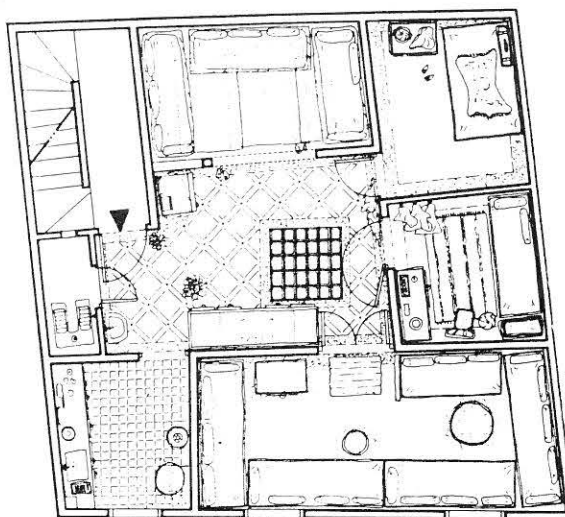
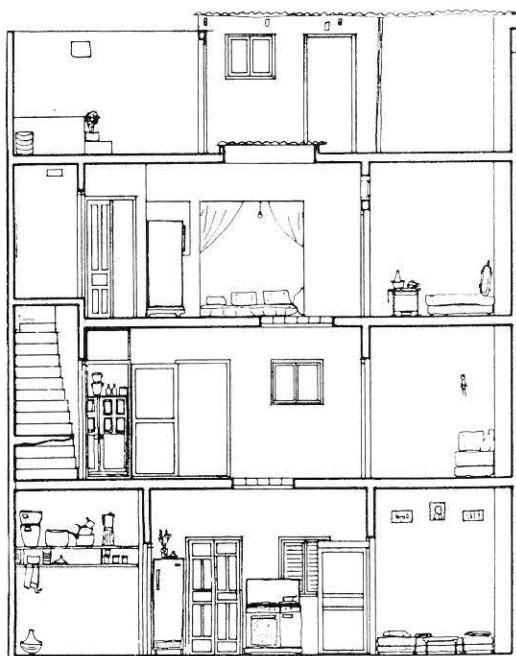
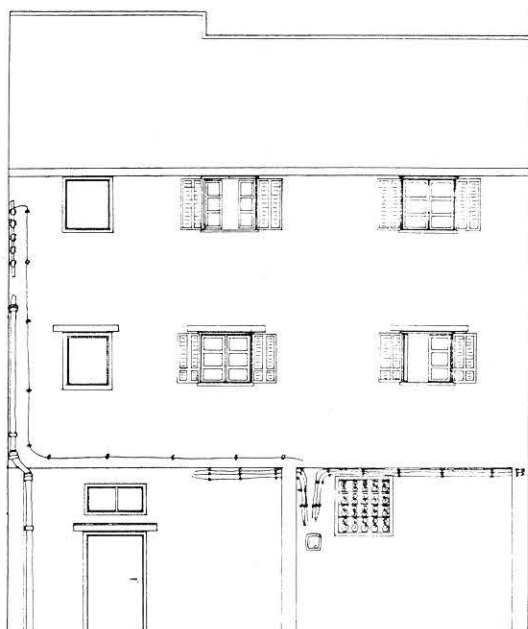
Their urban fabric is very regular with its parallel streets resembling narrow blocks made of two contiguous houses. The houses are still structured around a central space. In Tunisia the plots are quite large, allowing the houses to be further divided at a later date. In Morocco, land is much more expensive, so the houses are small, but built upward, with two or three floors. Each floor contains the same centrally planned apartment around the *m'rah*. The central space is covered by a floor and open in the center with a *douaia*—filled in with transparent glass bricks—which lets light penetrate into the apartment. The main or living room is located towards the street and opens on the street with windows. It is the only room that has windows on the street; all the others have windows oriented only to the central covered space.

## The Facade

In Morocco and Tunisia, as well as in Algeria, the street facade becomes a space of representation, establishing a strong, new relationship with the public space. In Tunisia, the popular house is built on a single level in a U-shape; it opens onto the street, with a fence separating the courtyard from the public space. The top of this fence has a transparent decor, allowing one to look into the courtyard and the interior facade of the house. This “new” style of house refers explicitly to the suburban bourgeois villa, which has become the dominant building type in North Africa. In Morocco, the outdoor walls of the house are decorated with geometrical elements made of cement. In this case, the decor and the ornaments which are traditionally inside the house and seen from the indoor courtyard, become the major urban element of the housing settlements. The builders compete with each other to have the best decorated facade, which constitutes their personal creative contribution to a new collective and urban process.

After so many years of European influence, the contemporary building at last orients itself towards the street and contributes to a decorated urban facade. The break with the traditional model is complete, thereby asserting the continuity with the colonial period *arabisantes* or eclectic facades. This new facade has had a tremendous impact on the existing traditional landscape: street facades of the ancient villages or city houses are destroyed and covered with balconies, arcades, or decorated loggias. The traditional blank street is replaced by an over-designed urban statement. With the great building dynamism of the population, the traditional architectural

Figure 8. A house in Douar El Hajja, Rabat.





patterns disappear very quickly. A new urban landscape quickly develops all over the outskirts of the city.

Despite these numerous and spectacular transformations in the physical appearance of the city, the spatial type of the house remains very close to the traditional one. Centrality is still the determining concept in the structure of the house, and the central space is still its main indoor space. This reference to the Islamic tradition is in contradiction to the exterior developments of the facades and expresses the double aspect of these popular settlements. The house retains the basic principles of the indoor tradition to express the permanence of the cultural patterns in North African contemporary urban society. The second aspect, the openness of the house to the public space, shows the capacity of the traditional spatial model to adapt to the changing contemporary ways of living. Today's popular North African house belongs to two architectural traditions—a private Islamic one and a public modern one—which make the building a complex structure referring to tradition as well as modernity.



*Karl S. Kropf*

## Typological Zoning

At first glance, typological studies and zoning as a system of planning might seem odd companions—building typology and urban morphology have in part developed in reaction to the results of zoning—but, despite the apparent conflict, the two are not necessarily at odds. Rather, they have the potential to complement each other. On the one hand, the general structure and mechanism of zoning offer an ideal context for the application of typomorphological principles. On the other, typology and the type concept provide a means of overcoming some of the problems of zoning. In particular, a typological approach to zoning addresses the complaint that zoning tends to prohibit historical or traditional forms of building and urban fabric. This paper sets out the principles of such a fusion of typology and zoning, using an example of its application in practice as an illustration.

### What Is Wrong with Zoning?

The end product of land-use zoning has been the subject of increasing criticism for a number of years—in America, at least since the publication of *The Death and Life of Great American Cities* (Jacobs 1961)—and by now, the criticisms are both common and familiar. Downtown commercial zones are sterile, monotonous, and lifeless; urban residential areas are lively, but often run down and dangerous, abandoned by the middle classes who have fled to the suburbs. Those suburbs are, in their turn, car dependent and congested, anti-pedestrian, fragmented, and foster social isolation. Industrial zones are, and always have been, just plain nasty. The industrial or business park provides some relief but still sacrifices any gesture to the pedestrian for the sake of unimpeded traffic flows, fostering chaotic patchwork fringe development.

From all this it is not clear, however, exactly where the blame lies. Is it with land-use zoning or the images and ideals of twentieth-century architecture and urbanism? To a large extent, early- to mid-twentieth-century architecture and urbanism are difficult to separate from the principles and practice of land-use zoning. They emerged together, one informing the other. Segregation of uses accompanied the development of building types designed specifically for particular uses. Notions of minimum standards for dwellings and architectural ideals such as Functionalism provided a

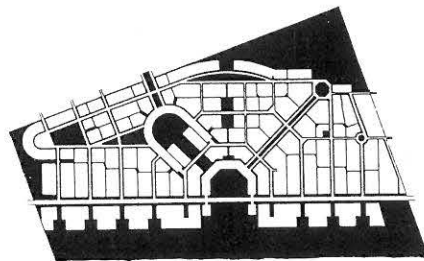
basis for the image and layout of particular zones.

Then again, one could argue that the blame lies elsewhere—with the developers or the economic system. It would be more productive, however, to turn the question around. Laying blame for a problem at best only initiates another task: coming up with solutions. It would be better to start by asking, does land-use zoning preclude alternatives, and if so, how?

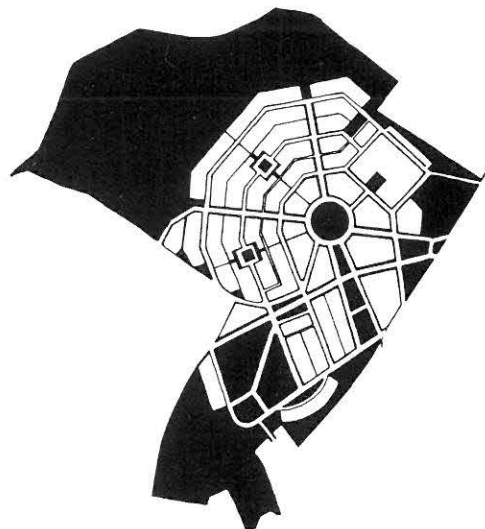
Recent criticism of zoning has focused primarily on the segregation of uses and the restricted range of forms allowed by standard zoning bylaws that often excludes traditional building types. In these respects, zoning does present a barrier to alternatives. This is not, however, part of the general idea and structure of the zoning system; rather it is a matter of the specific content of zoning ordinances. The mechanism of zoning can be used in different ways; it is relatively neutral, even if it does have problems of its own.

The solution is thus not necessarily to scrap the whole system of zoning, since the most pressing contemporary problems, in particular those centering on maintaining historical and regional character and mix of uses, can be addressed within that system. It is necessary, however, to change the emphasis of the bylaws and the basis on which the zones are defined. A general means of effecting that change is to move from zoning codes that are use-led to those that are form-led. This shift of emphasis is not a new idea: systems of land-use zoning have for the most part always regulated form as well as use and have thereby constituted a kind of form zoning. Over the past decade, a more explicit use of form-based zones has been taken up in some urban design work, notably that of Duane and Plater-Zyberk (DPZ) and SOM in San Francisco under the direction of John Kriken. While this work has made important advances, a number of fundamental questions remain. Most pressing is that of regional and historical character.

*Figure 1. Planning projects by Duane and Plater-Zyberk, showing the similarity of street-block patterns (from *Towns and Town-making Principles*, A. Krieger ed. Rizzoli, New York 1991)*



Seaside, Florida



A Village near Annapolis, Maryland



If this recent work has adopted an approach that creates zones defined in terms of form, the question then arises, what is the source of the forms prescribed? What is their relation to any existing built fabric, either in the immediate surroundings or the region in which the development occurs? In many cases, the source and relation are not clear. In the work of DPZ, for example, the types of street/block pattern and building types tend to be much the same wherever the development takes place. To a large extent DPZ has created its own style, paying little attention to local, historical forms (figure 1).

### **A Typological Approach to Zoning**

Applying the principles of typo-morphological studies to the framework of form-based zoning provides a means of overcoming these problems. Typology and zoning can be brought together to provide a powerful tool for planners and urban designers. The principles of typological investigation introduced by the Italian architect Saverio Muratori and further developed by Gianfranco Caniggia, Gian Luigi Maffei, and others, suggest a number of working assumptions for such a typological approach to zoning. Three of the most pertinent principles are:

1. Existing forms are at once the product of learning and a record of past experiments in accommodating human activities and needs. Those forms that have been developed through active use offer a starting point for new designs which accommodate similar activities.
2. Built forms and human activities are intricately interrelated but the relation is not fixed. While forms remain relatively stable over time, uses and activities tend to change more rapidly. A given type of form can accommodate a range of activities both at a given time and over a period of time.
3. The structure and character of a town result from both continuity and change at various levels. Some forms persist while others are transformed or erased, creating a palimpsest. The structure of a town at a given time is the result of all its previous history up to that point.

For a typological approach to zoning, the first of these principles leads to the working assumption that the zoning codes should take as a starting point local and regional forms. The diversity of built form, particularly in terms of regional and historical differences, is a product of learning and so an asset and resource. This approach treats the so-called historical built environment not as a museum but as a library. The existing forms of an area are viewed as potential solutions in the continuing task of accommodating human needs in that place. If particular forms of building have proved satisfactory and convivial over time and the core of human needs remain relatively unchanged, at the least those forms provide the most sensible starting point for new ones. Selecting local forms of building

which have proved most adaptable as a basis for regulations helps maintain character while the adaptability of those forms helps them remain viable. Selecting a range of local forms promotes the richness of diversity and allows for flexibility of use.

The second principle, that the relation between form and use is not fixed, leads to the working assumption that the zoning codes should allow for mixed uses. For a given form, there is a range of potential uses, some realized and some latent. Equally, there is a range of forms that might accommodate a given use. Industrial activities, for example, tend to need buildings with large floor-plates, though there will be a variety of specific buildings that can satisfy that requirement. There will be a range of sizes and arrangements for a given activity and a range of uses that might fit into a given size and layout of building. The limits of these ranges are set by the activity, the physical form of the building, and by social and cultural restrictions. Thus even the limits are not entirely fixed but may shift (Anderson 1978: 6-7).

Given this variable relation between form and use, there is a consequent tendency to find a diverse interaction between humans and the physical fabric of a town. A variety of forms and a variety of uses may be found within a single area. Using the principle of *range* and *limits* within a system of zoning (along with judicious application of direct restrictions to avoid the more unacceptable conflicting uses) makes it possible to control uses while still allowing for a mixture within zones. Selecting limits based on an analysis of existing relations of use and form will provide regulations that allow for variety and satisfy contemporary standards while at the same time helping to maintain the character of the town. Conversely, identifying and selecting existing forms that best accommodate a mix of uses helps to achieve the same ends.

The idea that the built environment is a palimpsest suggests the working assumption that the regulatory zones in a typological approach should allow for both continuity and change. The desire to maintain or restore areas to

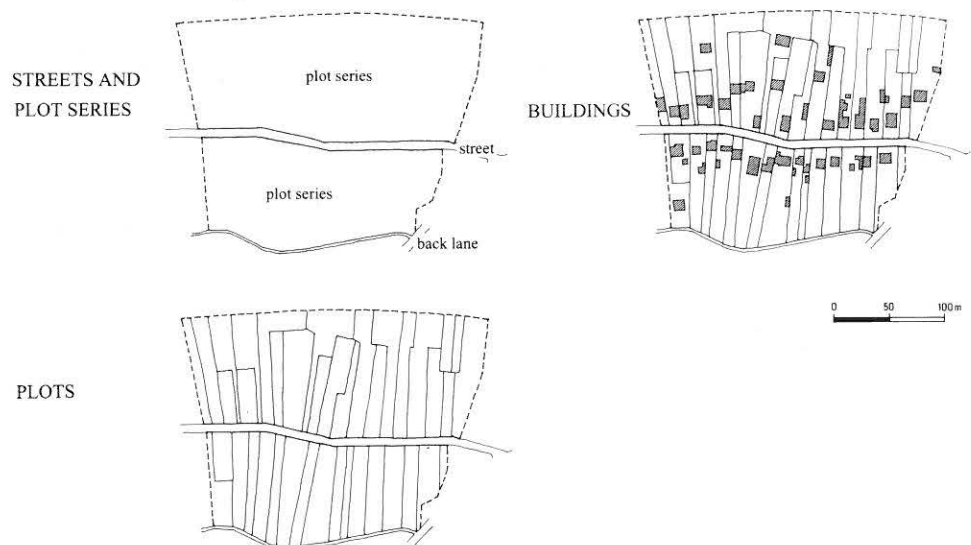


Figure 2. An urban tissue shown at increasing level of resolution.

an ideal historical state is at best problematic. Aside from the practical problem often presented by lack of information, any such ideal state is necessarily a reductive and static abstraction. Conceiving of a town or parts of a town as static objects denies the processes by which they arrived at any given state. The job of the planner and urban designer should not be that of a mortician but a doctor. The zones should be conceived as tools for promoting the life of the town and guiding future development. They should be viewed as a means of mediating between forms which, on the one hand, codify the historical "accidents" in the development of the town and give it its individual character and, on the other, those forms that constitute "good design". The forms prescribed by the zoning codes ought to contribute to the historical character of the zone and to the continuing life of the town as a whole.

## Urban Tissue

The key to realizing these principles in a system of form-based zoning is the *urban tissue*, a concept fundamental to typo-morphological studies. As a tool for analysis and explanation, it helps us to understand both the physical structure and the historical development of urban areas and the relation between urban areas and individual buildings. While the concept is in general use in the discipline of typo-morphological studies, perhaps the most fully developed conceptions of urban tissue are those of M. R. G. Conzen, the German émigré geographer, and Gianfranco Caniggia. Their work has provided the basis for the concept of urban tissue as applied to the task of zoning for the project described in the following section (Caniggia and Maffei 1979, 1984; Conzen 1969; Whitehand 1981). It is a conception which is in effect a synthesis of Conzen's *plan unit* and Caniggia's *tessuto urbano*.

This synthetic conception sees urban tissue as an organic whole whose form can be described at distinct levels of resolution. The levels correspond to the different elements identified in typo-morphological analysis. Again synthesizing Conzen's and Caniggia's conceptions, the elements are: (a) streets and blocks (or plot series); (b) plots; (c) buildings; (d) rooms or spaces; (e) structures, such as walls or roofs (encompassing details of construction); and (f) materials. As in Conzen's *plan unit* and Caniggia's *tessuto urbano*, these different elements are interrelated in a hierarchy. Smaller-scale elements combine to form larger-scale elements which in turn are parts of still larger elements. Using the hierarchy as a framework, it is possible to define tissues systematically at different levels of specificity by describing the constituent elements step-wise through the levels of resolution. At the most general level, a tissue can be described as an arrangement of streets and blocks. Greater specificity is achieved by describing the component plots of the plot series and on through component buildings, rooms, structures, and

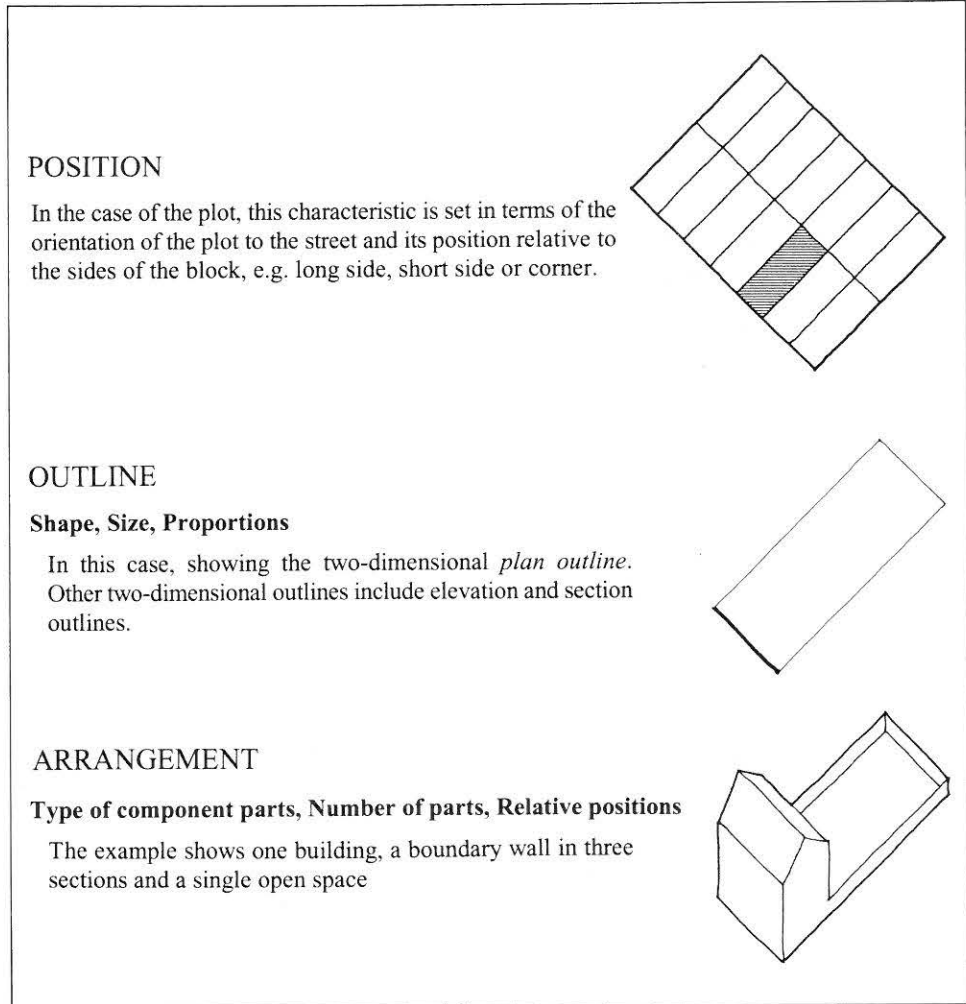


Figure 3. Characteristics used in identifying types, taking the plot as an

materials, depending on the level of specificity appropriate to the task (figure 2).

The specific characteristics used to describe each element are its *position*, *outline*, and *internal arrangement* (figure 3). Position is described in terms of the element's place relative to other elements in an arrangement making up a larger-scale entity. Thus, a plot can be described in terms of its position in a block, relative to other plots and the street (i.e., the edge of the block). One can then identify corner plots or plots on the long or short edge of a block. With rectangular plots, one can also distinguish between wide or narrow frontage plots, that is, between those with a long or short side on the edge of the block.

The outline of an element is specified by describing its external boundaries in terms of *shape*, *size*, and *proportions*. In some instances, either for convenience or because of lack of information, this is limited to the *plan outline*, that is, the two-dimensional outline on the ground plane.



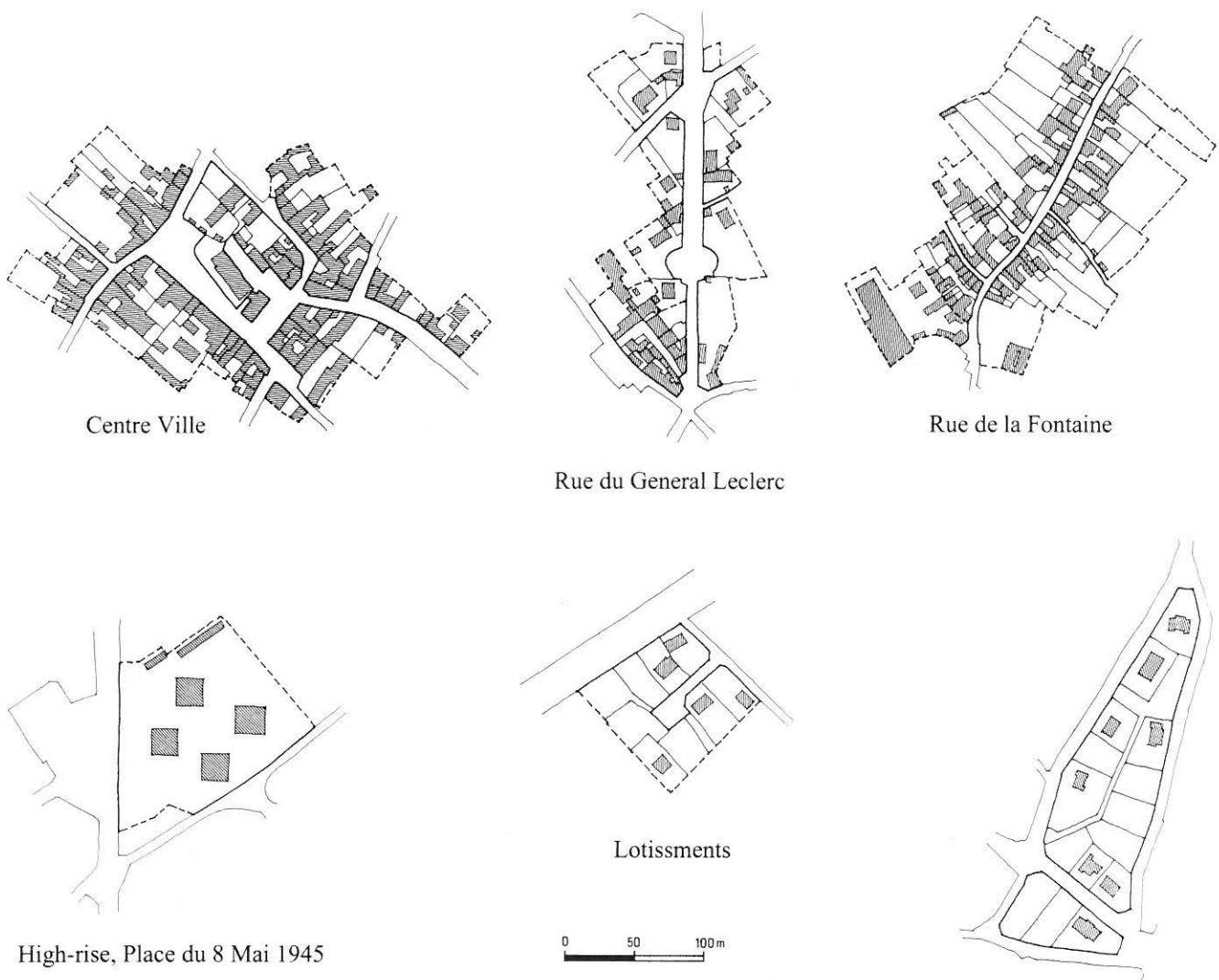


Figure 4. Examples of urban tissues from Mennecy, France.

Arrangement is described in terms of the *type of component parts*, the *number of parts*, and their *relative position*. In turn, the types of component parts are distinguished by their outline (as above). As an example, a plot (figure 3) can be described as an arrangement of a house (one), a garden (one), and a boundary wall (one, in three segments) all in the relative positions shown in the figure.

Different types of tissue can be systematically identified in analysis and described in terms of the characteristics of the constituent elements at each level of resolution. A typology of tissues can then be generated through comparative analysis (figure 4).

### An Application in Practice

How can this be used as a tool in zoning? A project in which I have been involved in France, in collaboration with the association *Doits de Cités* and

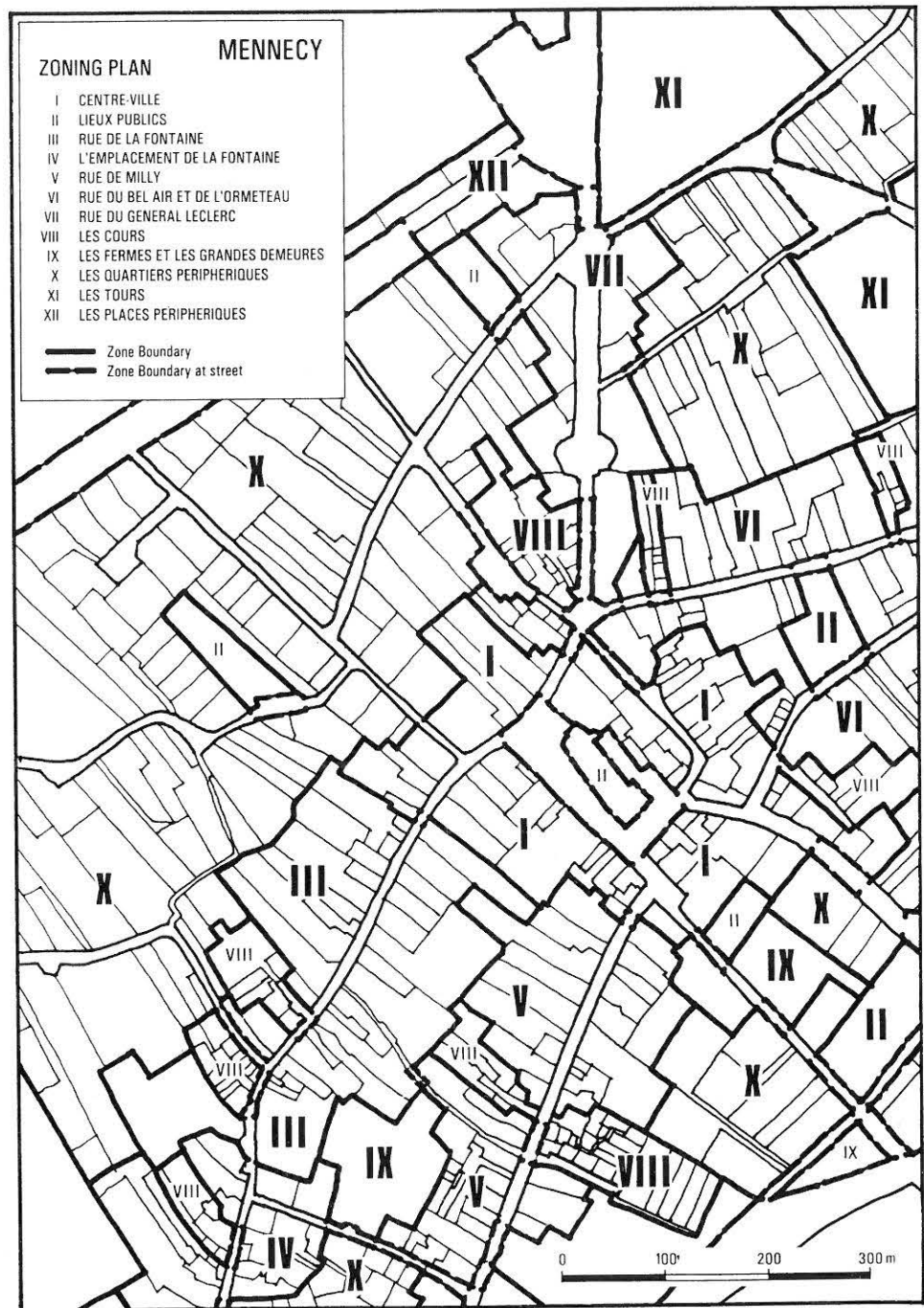


Figure 5. Part of a Proposed Zoning Plan for the center of Mennecey.

Ivor Samuels, can serve as an example. To put the project into some perspective, the job was to produce a Plan d'Occupation des Sols (POS)—the French local land-use plan—for the town of Mennecey, just south of Paris. The primary objective of the project was to provide a zoning plan and regulations for the central area of the town which would work to maintain its historical and regional character while still allowing for new development and change. The existing POS had proved ineffectual in addressing these concerns because, like most POSs, it was produced using standardized zone designations and codes. The typological approach offered an alternative, using zones and regulations derived from the specific structure of the town itself.

The procedure for creating the POS began with a typo-morphological analysis to identify the distinct tissues constituting the town and their characteristic components (see figure 4 for examples). The full process of analysis involves examining the specific elements and element patterns at all levels in order to identify and then describe the distinct zones in detail. A working assumption in analysis is that a distinct tissue is the result of a distinct process of formation. In general, that means different tissues are

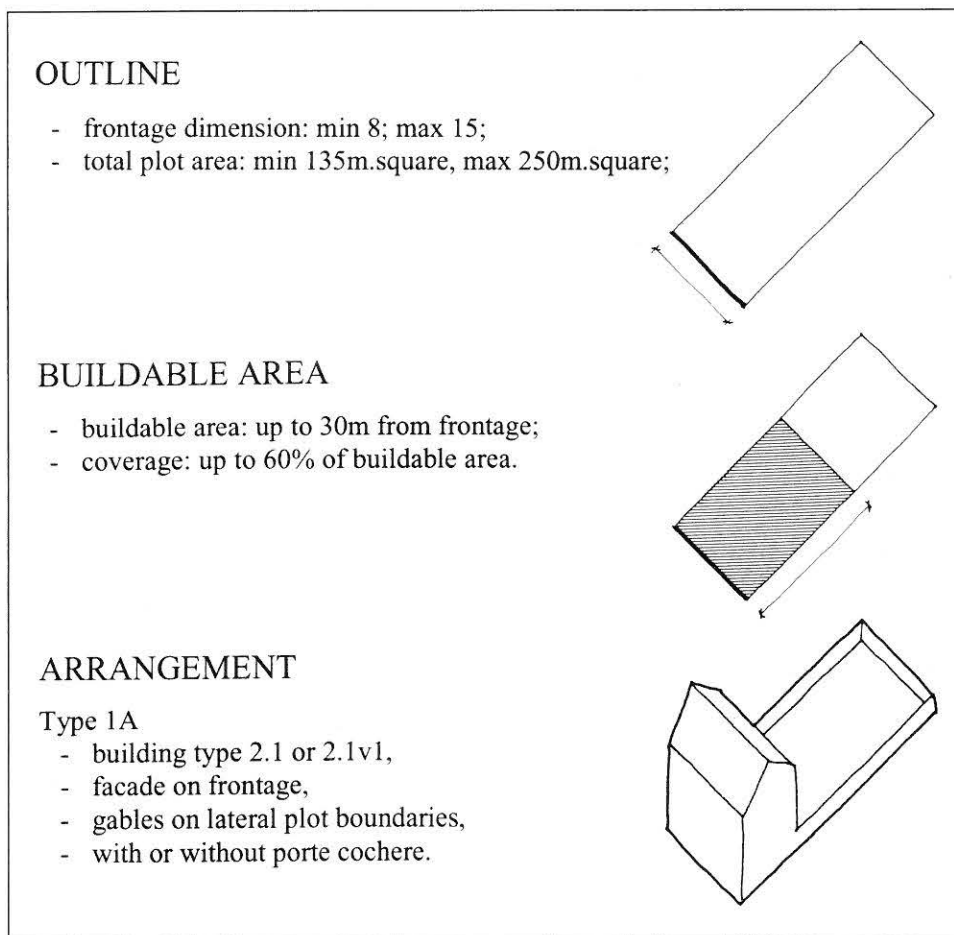


Figure 6. Example of regulations for plots from the Centre Ville zone. The regulations indicate minimum requirements.

the product of different stages in the development of the town. As a result, the analysis has a historical dimension. Archival material, historic maps, cadastral surveys, and archaeological and art-historical information provide a picture of the historical development of the town which in turn provides a basis for identifying distinct stages and distinct tissues.

The analysis is framed in the terms described above, that is position, outline, and arrangement. These characteristics are used as a basis for identifying a range of types for each element—that is, for each generic element, such as plots or buildings, examples with similar outline, component parts, and arrangement are grouped together and identified as a type. The range of types is made up of those which most clearly constitute the zone, either numerically or historically.

The types as found in analysis are then taken as the basis for the prescriptions applying to the zones. The specific characteristics which identify the types are translated into prescriptive requirements for new building as well as changes to existing buildings. Thus, for the plot (figure 6), the regulations limit the frontage dimension and the maximum area (corresponding to the plan outline), the general distinction between built area and unbuilt area, and the possible arrangements of buildings within the built area (corresponding to arrangement), including the type of buildings (corresponding to component parts).

In terms of planning procedure, the prescriptions work as a minimum requirement. For a new building to be approved within a given zone, first, the dimensions and proportions of the plot on which it is to be built must fall within the range specified in one of the plot types. Secondly (amongst other requirements) the arrangement of buildings and the type of component building must correspond to one of the range set out in the prescriptions (figures 7 and 8).

The tissues identified in analysis were used as a basis for outlining zones and producing the accompanying regulations. The choice of zone boundaries and prescriptions were made in discussion with the mayor and council—as well as residents' associations—taking into account their wishes on a number of points including density, the location of any new development, and the maintenance of historical character. Figure 5 shows part of a zoning plan for the center of Mennecy, indicating the regulatory zones.

In brief, the analysis suggested that the Centre Ville, Rue de la Fontaine, and l'Emplacement (settlement) de la Fontaine were built up early in the life of the town, followed by the growth of Rue Bel Air and Rue de l'Ormeteau, Rue de Milly, and the creation of Rue du General Leclerc and the transformation of the Place de la Mairie (Centre Ville). Peripheral development followed, first of single-family houses along and between the routes into the center (Les Quartiers Peripheriques and Places Peripheriques) and then by the high-rise estates (Les Tours). Interspersed amongst the major zones are smaller zones and single parcels that constitute zones



including public places such as the church, town hall, schools, and police station (Lieux Publics); farms and large detached houses with large grounds (Les Fermes et Les Grandes Demeures); and collections of small houses around courtyards (Les Cours).

Since the goal of the plan was primarily to maintain the existing character of the town, the zone boundaries and regulations correspond for the most part to the tissues identified in analysis. Each zone represents, to some extent, a district with a distinct character derived from its particular position and historical development.

As the intention was not to freeze the town in the state as analyzed, the zones do not in all cases correspond to the outline of the tissues. The zones are intended to indicate the desired result of ongoing development in the area defined. In effect, they represent a range of possible modes of development for the town. So, for example, the Centre Ville zone, which allows for relatively dense development, was extended beyond the boundaries found in analysis in order to reinforce the character of the center and provide the potential for growth.

### Continuity and Change

How does all this help to maintain the historical character of a town while allowing for change? It does so, on one hand, by creating zones derived from the existing structure of the town and, on the other, by setting out regulations in terms of levels of resolution and types that are defined by position, outline, and internal arrangement of parts. These concepts build on two related insights of typo-morphological analysis. One is the recognition of variable rates of change between elements at different levels of resolution. Buildings tend to change faster than plots which tend to change faster than streets and blocks. The other insight is the identification of the hierarchical relation of part-to-whole between elements. Buildings are contained within plots which are in turn contained within blocks. Taking those insights as a starting point, the notions of levels of resolution and types characterized by position, outline, and internal arrangement make it possible to be very specific in identifying what changes and what stays the same in the transformation of urban fabric. In turn, that more specific knowledge makes it possible to formulate regulations which accommodate both continuity and change.

In Mennecy, for example, at the level of streets and blocks, the outline of the blocks is fixed in the plan, for the most part following their existing outlines. The outline of blocks is used as a tool for regulation by designating it, or not, as a buildable frontage: development can only occur on a plot with a buildable frontage. In the case of any new streets, the principle followed for choosing the alignment is that it should, as far as possible, lie along existing paths or property lines, thus again maintaining continuity in terms

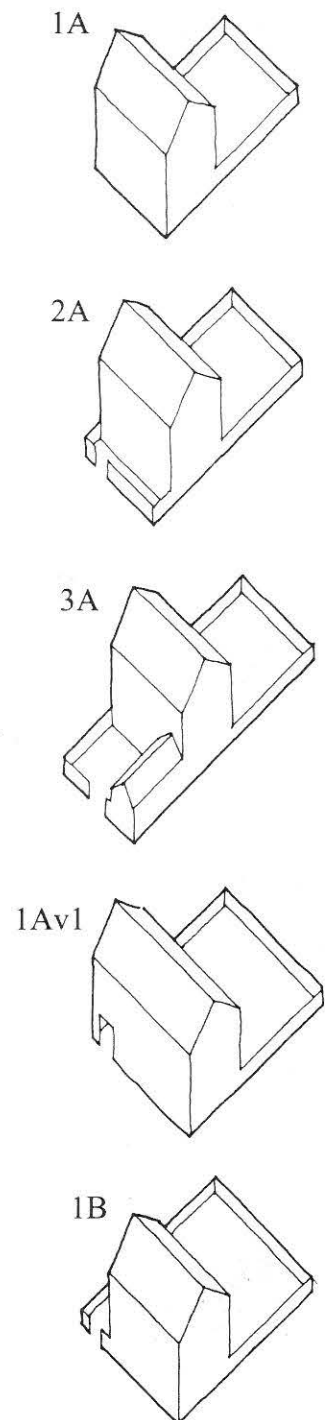


Figure 7. Diagrams illustrating a selection of allowable types of plot arrangement. Some types are allowed in all zones and others are limited to particular zones.

of position, while allowing for change in terms of the specific parts. At the level of plots, the regulations identify a range of allowable plot types, first set in terms of outline dimensions and proportions (frontage to total area). This makes it possible to change plot sizes and the internal arrangement of the blocks while the outline of the blocks is fixed. Some continuity of plot boundaries is still likely, to a large extent because changes will tend to be in the units of existing plots by division or combination (figure 6).

In terms of the internal arrangement of the plots, the regulations maintain continuity at a low level of specificity by identifying a general division between buildable area and non-buildable area. Building is only allowed in the buildable area, which, in most of the central zones for example, is along the frontage. Within that area any new building or changes to existing buildings may be composed in accordance with one in a range of types of internal arrangement. Change and variety are possible in terms of the specific arrangement and within any given arrangement in terms of the component buildings (figures 7 and 8). The buildings which make up the arrangement might also vary or be changed—again, within limits. There is a range of allowable building types, defined in terms of their outline and to some extent their internal arrangement, specifically, the number of floors, floor-to-ceiling heights, and the position of the ground floor relative to the street level (figure 9).

Formulating regulations using levels of resolution and types defined in terms of position, outline, and internal arrangement in effect sets up limits within which change is possible. Different arrangements are possible within fixed outlines and different parts are allowed within fixed arrangements. Using the notion of an allowable range, either of positions, outlines, arrangements, or parts makes it possible to, so to speak, screw down or loosen up the limits by widening or narrowing the ranges.

Alternatively, in some situations it might be considered appropriate to do away with some limits altogether, while keeping others. For example, new development might be regulated at the level of streets and block, plot outline and arrangement, and building materials but left open with regard to building types.

Having defined the zones and formulated the regulations on the basis of differences in form, the allowable uses within the zones were based on those existing at the time the plan was prepared. The French zoning system allows for mixed-use development and particular uses are often not specified. To a large extent, control of conflicting activities is based on the concept of nuisance, and this was the approach taken in Mennecy. The regulations concerning form create implicit restrictions on possible uses, and the specific regulations concerning nuisance prevent particular conflicts. The result works to maintain the existing situation which has a greater mix in the central

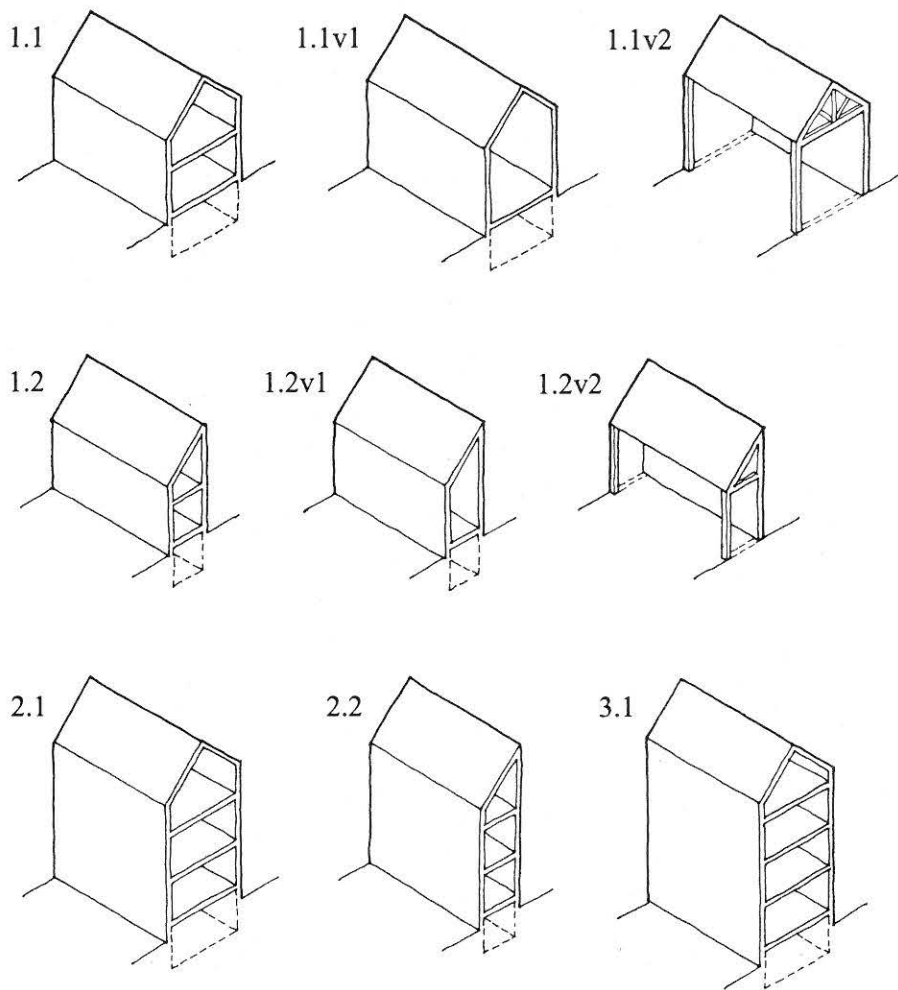


Figure 8. Diagrams illustrating a selection of allowable type of building form.

areas—including office, retail, residential, public services and workshops—and some individual zones of relatively unmixed uses in the fringe areas, including residential as well as commercial and industrial areas.

### Learning from Results

As is true of any plan, formulation is one thing and implementation another. For political reasons, the plan for Mennecy has so far not been put into effect. However, the approach was first developed in 1991 for the town of Asnieres-sur-Oise where it has since been passed into law and buildings have gone up according to its regulations.

The results are encouraging, but they also suggest that one must still learn from them. To a large extent, the typological approach to zoning is itself predicated on the notion of learning—that forms of building and urban tissue have developed through a cultural and historical process of adaptive experimentation, evaluation, and further adaptation and experimentation.

As an experimental adaptation of land-use zoning, typological zoning is itself a step in that process.

To learn from it, we must monitor and evaluate the results. First, the specific results of the regulations must be evaluated with respect to the goal of maintaining the historical character and improving the quality of the environment. Second, the whole approach must be evaluated with respect to its ability to accommodate change and experimentation. Only on the basis of such evaluation will it be possible to judge the approach effectively and further adapt it in the continuing effort to provide a satisfying and convivial environment.

By taking a more detailed and specific view of urban form, typological zoning seeks to provide a basis for making more informed experiments and, at the least, knowing what we are leaving out when we propose changes. It seeks to establish a means to, so to speak, learn how to learn from all previous results. It is an attempt to understand the value of the patrimony embodied in the built environment and at the same time learn to recognize its robustness and capacity for change.

This is not to have our cake and eat it but to have the cake and the recipe and to know how to bake. It may not always work, but we can always bake another.

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*Anne Vernez Moudon*

## The Changing Morphology of Suburban Neighborhoods

City building is the process by which urban habitats are created and landscapes made up of houses, buildings, squares, streets, gardens, etc., are produced. It involves landowners, regulators, planners, designers, builders, lenders, and so on; it also involves action and compromise, and the outcome of decisions made both separately and jointly by various actors and stakeholders. Once created, it is then continuously used, managed, and transformed.

Urban morphology is the field that studies the process of city building and its products. Some of its practitioners call themselves typologists (Muratori 1959, 1963; Caniggia and Maffei 1979; Caniggia 1985), because they study the pieces or cells—buildings and open spaces contained within the framework of a discrete piece of land in single ownership or use—that generate and change the cityscape. Others call themselves urban morphologists (Whitehand 1981, 1988) rather than typologists because they concern themselves with both the generative pieces of the urban landscape and the characteristics of groups and sums of cells that eventually constitute the city or the town. Although they differ in the way they begin their explorations, both morphologists and typologists agree that the essential component of an urban landscape is the historical process that shaped it: urban space can only be understood as a temporal phenomenon.

Urban scholars and professionals familiar with typological and morphological studies criticize them on several counts. Some planners and designers simply find them excessively tedious (Samuels 1990). They also lament the fact that their research is almost exclusively concerned with historic city cores and small historic towns. Geographers complain that the non-quantitative bias in urban morphology obliterates its potential use for predictive purposes (Carter 1976). Finally, Italian urbanists claim that morphological analyses only apply to cases of historic preservation; applications to contemporary design and building are limited because the atomization of contemporary suburban fabrics requires a different approach to understanding urban structure. Labeling this phenomenon the “typological crisis” (Aymonino 1976), critics of urban typology and morphology believe that the relationship between individual cells of the urban fabric has changed from one of dependence on the city as a whole to one of autonomy and dissociation: individual buildings in historic and traditional cities exist in relation to one another; buildings in contemporary

cities stand alone and only share a street with their neighbors. It follows from their arguments that morphological research on contemporary cities is not only difficult, but not even informative. Figure ground and other studies of land use yield only descriptive data that do not enlighten the design or planning process.

In this paper I will address two specific and practical applications of the morphological tradition to the study of city-building processes. First, I will attempt to show that contemporary post-industrial suburban environments and urbanized regions exhibit some of the same characteristics as their industrial antecedents and argue that urban morphology provides generalized knowledge of the city-building process which serves as a basis for urban and city design practice. Second, I will investigate how morphological analysis can inform urban-planning theory as distinct from the theory of architectural design.

### **Morphological Analysis of Post-Industrial Suburbs and Urbanized Regions**

Since the end of the Second World War, most of the extensive urban expansion that has taken place in the Western world has been in the form of suburban development. Cities now have multiple centers and spread-out residential patterns. Traditional central cities have lost their economic primacy to regional development and have become what I have called "urbanized regions."

Since traditional urban morphology studies historic cities, how can it be applied to these new urbanized regions? To answer this question entails first a brief review of the history of the field in Europe and as it has been received in the United States.

Typological analysis is a relatively recent concern of American architectural theory. As modernist theory subsided, architects and designers began to show an interest in rethinking the way we classify buildings, and to reject the modernist focus on building function (Pevsner) in favor of form-and space-based taxonomies (Rossi 1982). Typological approaches to urban buildings have by now attracted a sizable following among designers. While urban morphology has had a marginal impact on the North American design and planning professions, planners have exhibited a renewed interest in what they call urban form as a dimension of land use. That interest emerged as a result of the current crisis in transportation planning, as congested highways and lack of funds demand a reduction in dependence on single-occupancy vehicles and an increase in the use of collective and non-motorized transportation. Because successful use of these alternatives to the car is known to be highly dependent on the appropriate urban forms, planners are once again turning to their study.

Meanwhile, research in urban typology and morphology has developed a

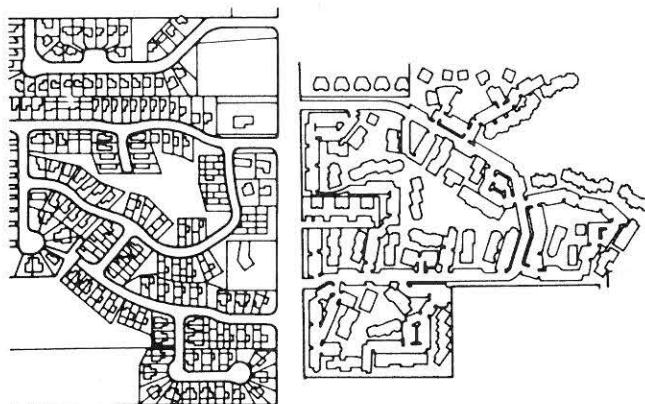


Figure 1. Basic residential plan units in U.S. suburbs. (Source: Moudon 1992).

Basic Plan Unit 1:  
Narrow, deep, lots and  
houses. Small grids of streets.



Basic Plan Unit 2:  
Wide, shallow, lots and  
houses. Continuous,  
curvilinear streets.



Basic Plan Unit 3:  
Zero-lot-line houses, garden  
apartments. Loops and  
cul-e-sacs.



Figure 2a: Wallingford  
Figure-Ground  
(Source: Hess 1994).

strong knowledge base in the city-building process and the resulting urban forms. My own research in the history of urban typology and morphology has identified three basic schools of thought which continue to shape the field (Moudon 1994, Urban Morphogenesis 1994), providing different perspectives not only on the city and the urban landscape, but on the value and purpose of analyzing them.



The oldest school grew out of geography as studied in Germany at the end of the nineteenth century. This Germano-British school was founded by geographer and planner M. R. G. Conzen (1960) who moved from Berlin to England before World War II and has been there ever since. The school stipulates that the study of the urban landscape forms the basis for developing a theory of the city-building process which not only explains the history of urban development, but also guides future planning efforts, and specifically establishes a new science of townscape management. The Conzenian school continues today as the Urban Morphology Research Group at the University of Birmingham (see references to Whitehand, Slater, Larkham, and Urban Morphology Research Group).

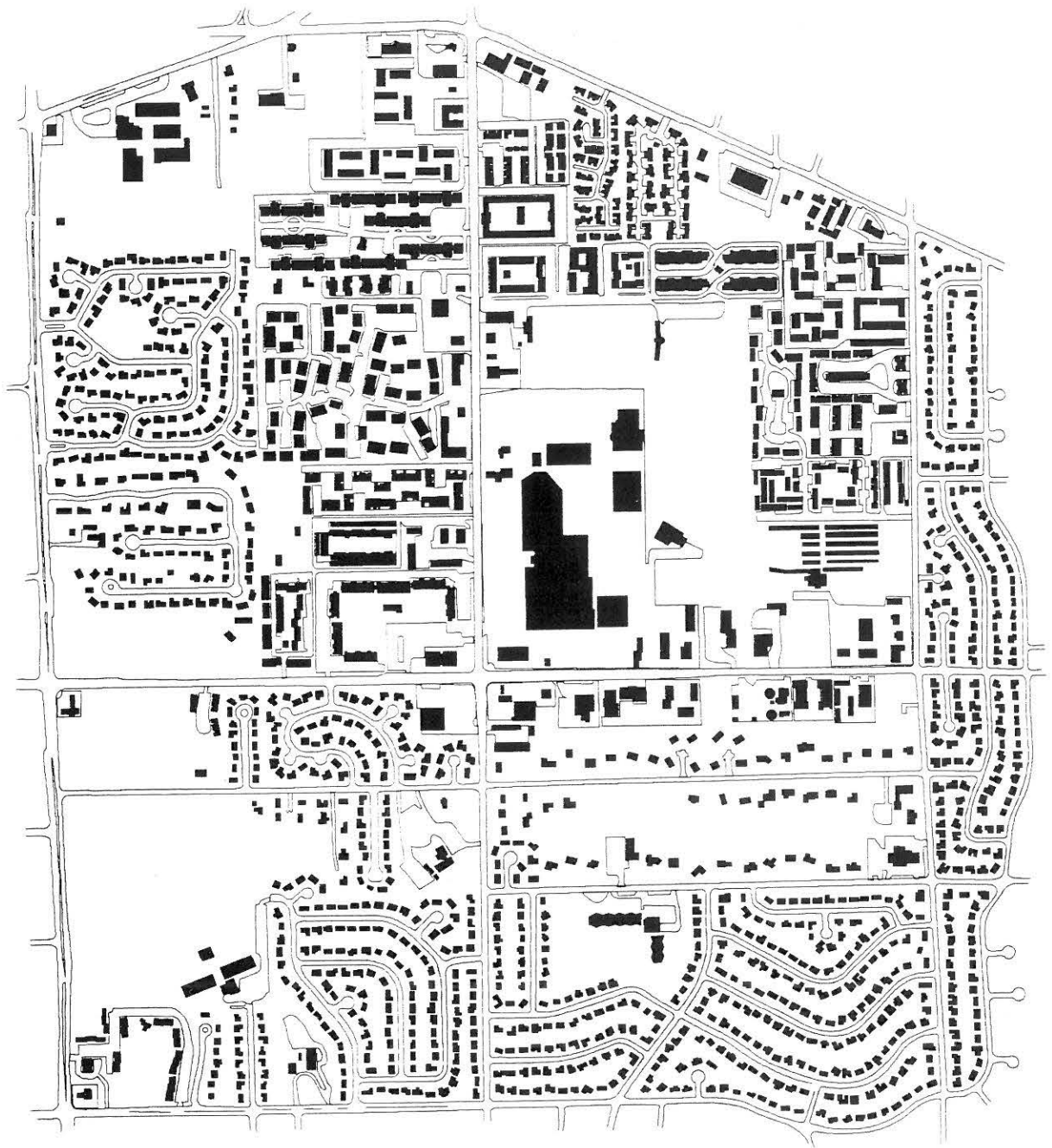
The second oldest school is Italian; architect Saverio Muratori founded it in the early 1950s. It is made up of architects who look to the study of the urban landscape as the basis for articulating a theory of architectural design. Its followers argue over the value of what they call typological analysis to contemporary design practice (Argan): some see it as a sure means of creating anachronistic places and embalming architectural design (Aymonino 1976), while others consider it an essential disciplinary framework for successful practice (see references to Caniggia, Maffei, Maretto, Cataldi, Strappa).

The third school is French, with architects Philippe Panerai and Jean Castex and sociologist Charles DePaule as its founders (see references to Castex, Panerai). First established in the late 1960s, the Versailles school has had the dual interest of developing a theory of city-building and a theory of design. It also has strong ties to the social sciences, exploring issues relating to the interaction between people and their environment. Finally, it seeks to relate the theory of design as idea to the theory of design as practiced. Morphological analysis has now spread to other schools in France, including Nantes and Marseilles (see references to Darin, Ville Recherche Diffusion, and Bonillo, respectively), and some of the courses taught at Versailles are now also available at the University of Paris (Choay 1986, Merlin 1988).

Most of this work has yet to affect research in the United States, aside from the works of J. Vance, Jr. (1990 at the University of California, Berkeley), M. P. Conzen (1978, 1980, at the University of Chicago), D. Holdsworth (1992, at Pennsylvania State), Brenda Scheer (n.d., at the University of Cincinnati), Spiro Kostof (at the University of California, Berkeley), Stanford Anderson (1986) and Attilio Petruccioli (1992) (both at MIT), and G. Baird (with B. Myers, 1978) and P. Rowe (1991) (both at Harvard).

## **Applications to American Suburban Environments**

My own experience using morphological research to further my understanding of American cities has been positive: I have found its application to suburban environments to be useful not only to students of



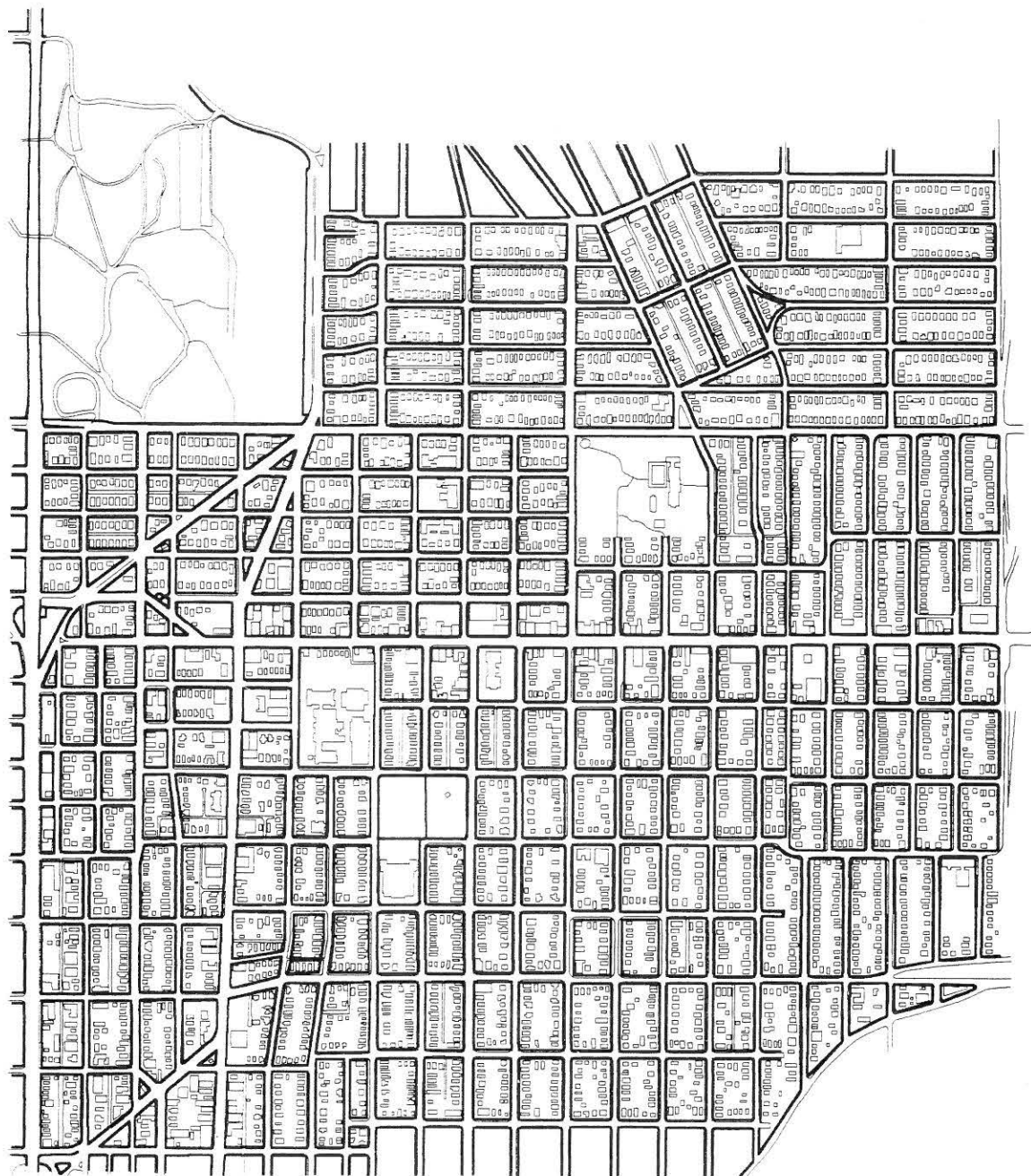
Crossroads: Figure-ground

Feet  
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 (natural scale 1:12,000)



Figure 2b : Crossroads,  
 Figure-Ground  
 (Source: Hess 1994).

these environments and of cities in general, but also to residents, regulators, planners, and policy makers. Not only do the techniques used on historic towns apply directly to new environments, but they also yield information which corroborate the processes documented earlier in historic towns. Similar findings have been published by Panerai in his studies of the urbanization of agricultural areas at the fringes of metropolitan Paris and



Wallingford: Public Sidewalks



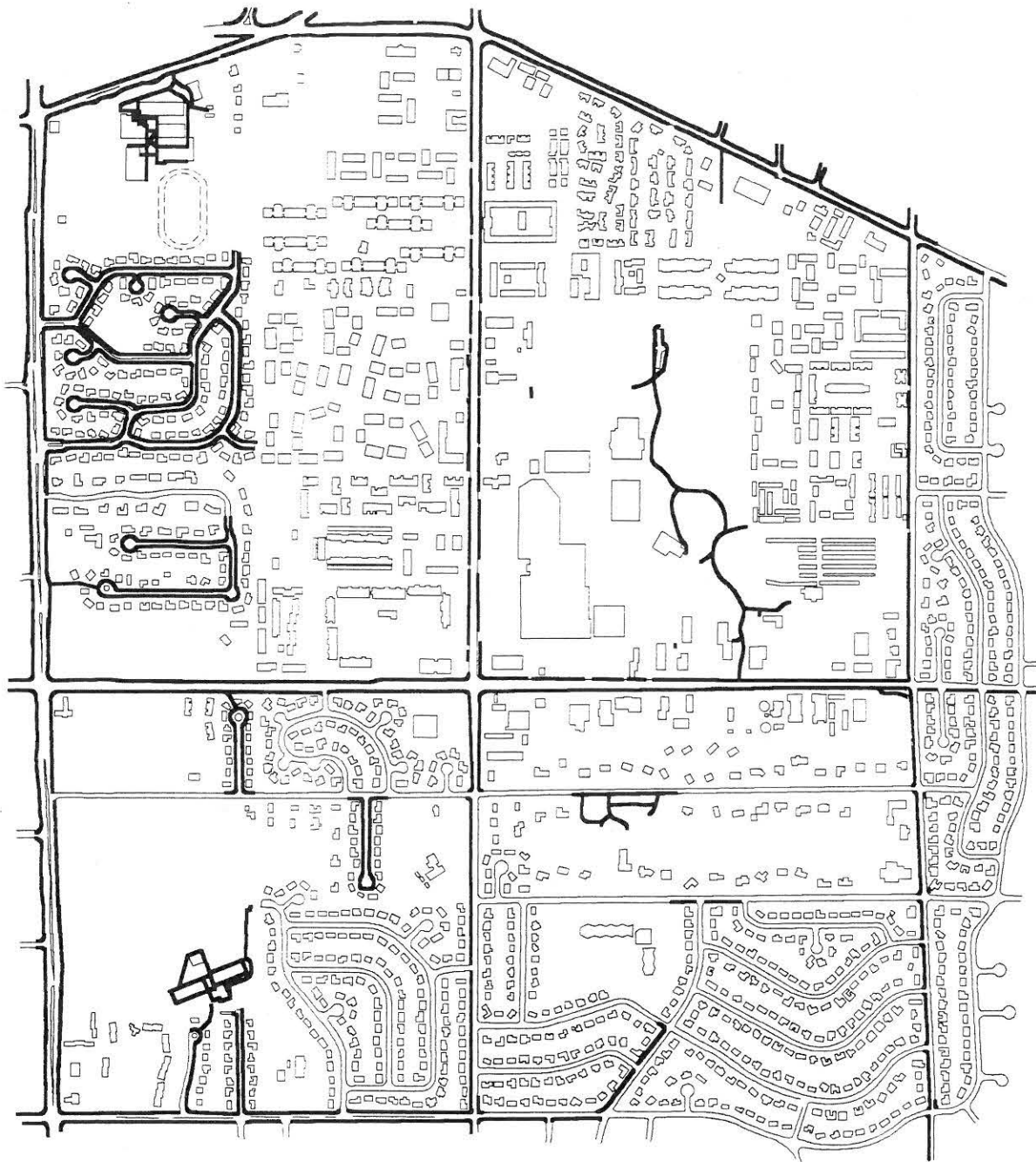
Cairo (Panerai et al., 1980) and by Demorgon in her studies of French suburbs (Demorgon et al., n.d.). Whitehand is now undertaking a massive study of English suburban development which should provide further verification that the morphological approach is suited to recent urban forms. The same elements found to structure historic towns exist in suburban landscapes: street networks, lot-subdivision patterns, buildings and their

Figure 3a : Wallingford,  
Public Sidewalks  
(Source: Hess 1994).

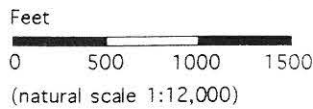
related open spaces —what Conzen termed the “plan unit” and Caniggia called the *tessuto* in historic towns—remain the basic defining elements. To be sure, the characteristics of the elements of suburban landscapes differ substantially from their earlier urban counterparts: suburban lots and buildings are much larger than those of traditional cities, and open spaces related to these buildings have become enormous, and, in effect, often dominate the suburban landscape. Street networks have exploded as well—Brenda Scheer has shown how “supergrids” have continued to increase in size since the 1940s (Scheer n.d.). Thus the grain of the suburban fabric has coarsened substantially, the result of the switch to automobile transport, the availability of cheap land at the urban periphery, both transport and other infrastructure improvements being the products of hefty subsidies by federal legislation since the 1950s, and the increase in the standard of living since the Second World War. Changes in lifestyle have had notable effects on house and related garden types.

Extensive research on suburban cities has led me to identify several basic types of morphological elements in the suburban residential landscape (figure 1, Moudon 1992). Defined as plan units (which, according to Conzen, are composites of streets, property subdivision, and building type), each type corresponds to a particular era of development identified as pre-1930, 1940-1960, and 1970-today. Basic suburban residential plan-units highlight the radical changes which have taken place in the practice of city building in this century—changes which of course reflect radical changes in life style, capital formation, and economic power of the household over this period of time. Actual suburban areas are in reality hybrid combinations of these basic plan units. Recent work carried out independently corroborates the existence of both basic and hybrid plan units (Southworth and Owens 1993). Though similar to their antecedents, morphological elements of suburban environments show signs of behaving differently. For example, my San Francisco work identified different generations of building practices succeeding each other over time in a given place (Moudon 1986): a proportion of early Victorian houses were replaced with apartment buildings, some of which were built on several of the original lots. In contrast, most of the suburban landscape is characterized by a single generation of building and, relative to older towns, little transformation. Suburbs that are 60 years or older and which, according to trends established in the nineteenth century, should have gone through two or even three generations of rebuilding, do not show radical change in their structure. Newer suburbs accommodate at most two generations of buildings, with the second generation being developed as infill, on land that has never been built upon. Clearly, while our cities and suburbs were geographically expanding exponentially over the past several decades (the New York metropolitan area tripled its territory without adding a single resident), relatively little physical change took place in the inner suburbs. This lack of transformative activity is unique in the 200 years of urbanization,





Crossroads: Public Sidewalks



but it has yet to be either highlighted or even studied well. It appears that while most central cities have experienced rapid degeneration as the result of the suburbanization process, inner suburbs have remained morphologically stable for a period of time that is unusually long in the recent history of cities. New house and street types, which in themselves constitute different generations of suburban landscape elements, emerge in

Figure 3b: Crossroads, Public Sidewalks (Source: Hess 1994)

newly developed areas, as opposed to existing areas.

Let us turn now to two neighborhoods I have studied in great detail over the past decade. One is Wallingford, an inner suburb of Seattle which was first plotted at the end of the nineteenth century, but developed between 1910 and 1930. The other is Crossroads, itself an inner suburb of Bellevue, the second center of the Puget Sound region, which has developed since the 1950s. While these two neighborhoods occupy a similar place with respect to their respective city centers, together, they span the range of suburban development that characterizes North American cities.

Wallingford is a "small-grid" suburb which developed within thirty years from its southern edge toward the north, with core development taking place along street-car lines (figure 2a). An east-west commercial street quickly became the center of the neighborhood and remains as such to date. As a neighborhood made primarily of farm houses and bungalows—lots are 40 or 50 feet wide and 100 feet deep, Wallingford has had some infill of apartment buildings since the 1950s and some gentrification since the 1980s: old houses have been rehabilitated, and small apartments and condominiums have been built along principal arterials as permitted by zoning. The neighborhood, initially developed for working families, now includes a mix of middle- and upper-middle-income people, some 30 percent of whom rent their homes. Changes have been limited, however, and the neighborhood remains one where the car is considered a recreational vehicle. All streets are lined with generous sidewalks, themselves lined by 20-foot front yards, and a strip of lawn along the roadway itself. Parking and garages have gradually been inserted into this fabric in small increments. The retail area is 15 blocks long, with small outlets lining the street. Most retail fits the mold of "retail as necessity": small shops, one supermarket with a small parking lot in the front, and an old school building which has been rehabilitated for use as a small commercial center with residences on the second floor. Only one middle school remains of the three schools that originally served the neighborhood. Several parks include a neighborhood park as well as a regional park at the edge of the area.

Crossroads began as a loose assembly of single-family subdivisions (fig. 2b). A mall was built in the early 1980s, and groups of apartment complexes followed, built around the area of the mall, most of them on 10-acre parcels. The shopping mall includes regional anchor stores, small retail outlets, and numerous eating facilities which are spilling out into the central interior pedestrian area. The mall is built on the model of "shopping as entertainment." The entire area was conceived for people moving in cars. Sidewalks are few, cars move along a supergrid of arterials a half-mile apart, subdivisions and apartment complexes are served by cul-de-sacs. The area has a mixed population in both income and ethnic origin, but people are segregated into enclaves and only mix in the commercial mall.

Wallingford and Crossroads represent respectively the first and the third and last types of suburban plan units shown earlier (figure 1).

## Morphological Analysis as a Planning Tool

The analysis of the two neighborhoods serves to illustrate how the morphological approach applies to urban planning. Detailed studies of the morphological characteristics of these two neighborhoods were carried out to explore their capacity to support transit use, non-motorized transportation, and especially pedestrian movement. According to planning theories currently regaining popularity (Pushkarev 1977), the use of both non-motorized transport and public transit is directly related to the density of population living in a given area. These theories are supported by empirical research identifying seven dwelling units to the acre as a threshold below which alternatives to the private automobiles are unfeasible. These precepts make sense: higher densities conjure higher numbers of people, which in turn suggests both vehicular congestion (disincentive to drive) and safety in the numbers using the public environment (incentive to walk). More recently, the idea was advanced that the proper land-use mix is another prerequisite for non-motorized transportation—the premise being that people must be able to see to a variety of activities within a relatively short distance.

Urban designers have also long been aware that density and land-use mix are necessary but insufficient elements of a pedestrian-friendly environment. Many areas of from 7 up to as many as 15 dwellings to the acre and also of mixed-use still do not have a strong pedestrian content because they are designed for automobile travel. A third condition necessary to support substantial levels of pedestrian activity is the provision of a safe and interesting environment attractive to the pedestrian. Rapoport (1991) has proposed the concept of “noticeable differences” as a basis for measuring the relative interest of different environments. Gehl has provided empirical evidence of the importance of pedestrian facilities and amenities to pedestrian travel (Gehl 1987). Pedestrian activity is now increasingly understood as evidence of the quality of an environment, particularly of its public realm.

Planners and transportation engineers do not refute these observations. However, they typically want to be able to measure in a precise way the qualities of the environment which they project. To respond to their request, we asked the following question: given areas of similar density, similar land uses, and similar populations, what are the elements of the physical environment that support pedestrian travel and life on the street, and how can they be described quantitatively?

Wallingford and Crossroads offer characteristics that allowed us to test possible answers to this question. Casual experience of both neighborhoods shows higher levels of pedestrian activity in Wallingford than in Crossroads even though densities and land-use mix within a mile radius are remarkably similar. Two graduate theses provide the bulk of the data for comparing the two. Paul Hess (1994) focused on the physical characteristics of the

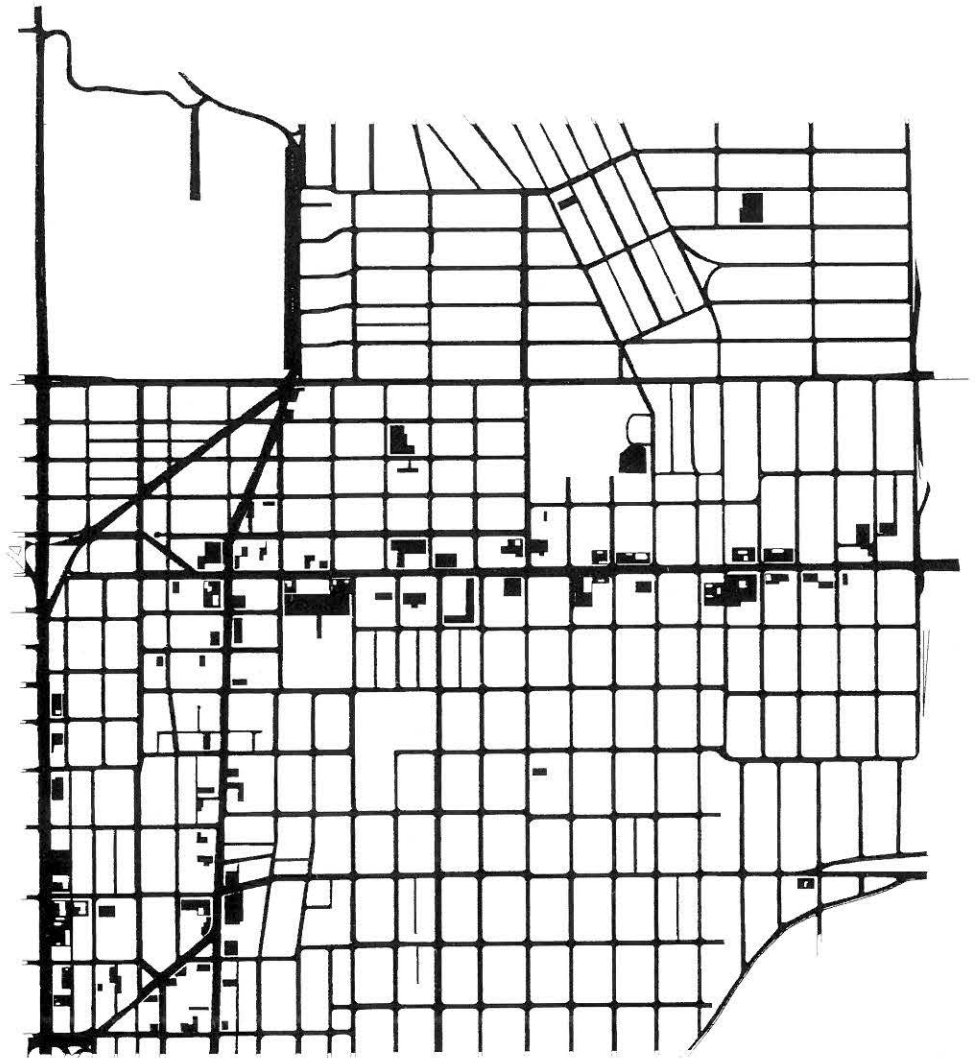


Figure 4a: Wallingford,  
Streets and Parking (Source:  
Hess 1994)

neighborhoods and provided the groundwork for the discussions that follow. David Saxen (1994) focused on the people on the streets. Time does not permit a detailed review of Saxen's work, but suffice it to say that he found almost three times as many pedestrians on the Wallingford streets as on the Crossroads streets, thus justifying further comparative studies of the physical characteristics of neighborhoods that support pedestrian activity. Paul Hess combed through the characteristics of the two suburban landscapes and reviewed in detail pedestrian facilities—where people walk, car-oriented facilities—where cars are driven and parked, as well as the distances covered by pedestrians. His focus was on the "potential environment," i.e., where people can walk or drive, as opposed to the actual environment, which David Saxen studied. Detailed studies of the match between these two types of environments remain to be done, but we did



find that the scarcity of the potential environment in Crossroads led to people walking everywhere they could and finding or even creating additional non-conventional pedestrian facilities. In Wallingford, on the other hand, the relative largess and permeability of the potential pedestrian environment showed more variation in the use of pedestrian facilities.

Figures 3 and 4 show the principal differences between the pedestrian and automobile environments of Wallingford and Crossroads. Three important findings were that there are major differences in the pedestrian environments created in the two types of suburban areas; that these differences can be measured relatively simply, and perhaps most surprising, that the amounts of space given over to the automobile in these two suburban forms are, in the aggregate, not very different. Starting with this last point, it seems evident that neighborhoods designed for the pedestrian and the streetcar have been adapted to accommodate the car, and have done so in such a way that as many cars can be fitted in their fabric as in the fabric designed later for the automobile. The difference in the impact of the car on the two areas lies not in the total amount of land given over to the car, but in the way this land is distributed: in small areas in the former, and in large ones in the latter. This point alone warrants further research.

Returning to the pedestrian environment, the differences in formal and informal pedestrian networks, their connectivity, and the respective areas which are within reached of normal pedestrian travel all serve to show that the pedestrian contents of an environment can be measured. The ratio of sight distance to actual travel distance which, in effect, measures the relative efficiency of the pedestrian network and facilities, appeared particularly strong indicators of a good or not-so-good pedestrian environment. Specifically, an inefficiency of the pedestrian network of more than 30 percent seemed to indicate a lack of support. The 60 percent inefficiency of Crossroads was particularly disturbing in that few of the points of origin in the half-mile radius fell into residential areas—meaning that people are assumed to walk from nowhere to the mall.

### **Use of Morphological Analysis for Planning in Suburban Areas**

In the studies described here, we found evidence of the truth of the self-fulfilling prophecy that if one designs for the car, people will drive. These cases also show that morphological analysis provides a useful bridge between common urban-planning practice and actual city-building practice. Urban morphology has developed tools which permit us to identify and to measure common elements in the urban and suburban landscape. Having been tested in a number of very different landscapes, these tools show that comparative studies can provide reliable data for analysis. Results of analysis provide important information about the creation of the landscape and can therefore begin to assist us in managing this landscape. What the

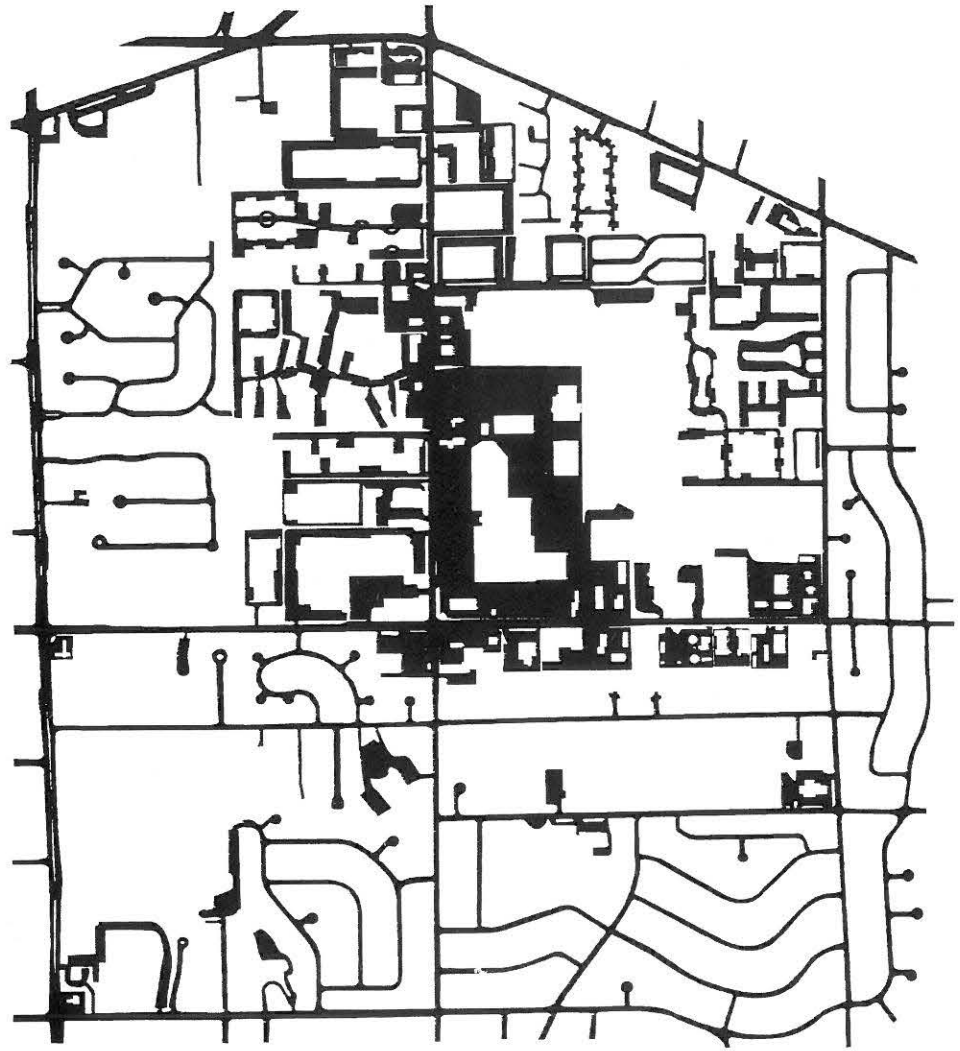


Figure 4b: Crossroads,  
Streets and Parking (Source:  
Hess 1994)

Crossroads: Streets and Parking



Birmingham school calls "townscape management" is an activity that looks at cities in a very different way from urban planning and one that our cities badly need.

Urban typology and morphology have been practiced for several decades by both geographers and urbanists in different parts of Europe. They are now emerging as a bona fide field of study which serves to (1) describe and explain principles of city building; and (2) provide guidance in preserving and developing historic landscapes. Though not commonly known in the United States, the use of urban morphological methods to study the North American landscape has shown that these methods (1) help to describe and explain the formal characteristics of suburban environments; (2) highlight which aspects of urban form will have an impact on behavior and address the functional dimension and performance of built form which have long been overlooked in planning; and (3) permit us to measure quantitatively aspects of urban form which, so far, have been described only in qualitative terms.

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Peter J. Larkham

## Urban Morphology and Typology in the United Kingdom<sup>1</sup>

Urban morphology is, simply defined, the study of urban form. This broad definition reflects a growing awareness that progress in understanding and managing the built environment can be aided greatly by integrating knowledge from various other disciplines and culture areas into it. Although in the United Kingdom urban morphology is most often subsumed under urban geography, scholars outside that discipline—in architecture, planning and, to a lesser extent, urban and social history—are also active in the field though they may not regard themselves as urban morphologists. Within geography, it belongs as much to historical geography as to urban geography, reflecting the longevity of the urban landscape that is the urban morphologist's object of study (Whitehand, 1987a, p. 250).

In particular, the origins of urban morphology are traced back to the morphogenetic research tradition of Central Europe and the work of Schlüter, who postulated a morphology of the cultural landscape (*Kulturlandschaft*) as the counterpart in human geography to geomorphology in physical geography (Schlüter 1899), thereby making the urban landscape (*Stadtlandschaft*), at least in industrial countries, a major research topic. Although Schlüter's direct influence extended little beyond the German-speaking countries, his ideas were spread through the publications of the German emigré M. R. G. Conzen, who laid the foundations for urban morphogenetics in the English-speaking world. In the German-speaking countries, urban form remains a subject close to the mainstream of historical and urban geography, and less distinction is drawn there between the study of present-day towns and the study of their historical aspects than in the English-speaking world (Whitehand, 1987a, p. 250).

Recently, the study of urban form has developed in several directions, but the historical one has been particularly strong. Interest in the historical development of urban landscapes has extended beyond scholars concerned with the past to include geographers and others involved in "contextual" architecture and the planning, or management, of urban landscapes who attach considerable importance to the forms created by previous generations. Nor are urban morphologists limiting their attention to a narrow conception of urban form; they are also examining the individuals, organizations, and processes shaping that form (see examples in Slater, ed., 1990). This has led to a refinement of the definition of urban morphology as "the study of the physical (or built) fabric of urban form, and the people and processes shaping it" (Larkham and Jones, 1991, p. 55).

## The Decline and Resurgence of Geographical Urban Morphology

The history of urban morphology in geography during the first half of the twentieth century and its diverse research traditions have been the subject of recent investigation (Whitehand, 1981, 1987a, 1987b; Slater, 1990a), much of it concerned with the urban morphogenetic tradition and the central role played in it by M. R. G. Conzen. In the post-war period, German-speaking geographers continued that interest as is evident in, for example, the major study of Vienna by Bobek and Lichtenberger (1966). British urban morphologists, on the other hand, have been less interested in conceptualizations of process than in description and classification, as exemplified by Smailes's characterizations of present townscapes in broad terms, based on rapid reconnaissance surveys (Smailes, 1955). In the United States, though a significant school of cultural morphology developed in the late 1920s, it was largely independent of direct European influence, and the so-called Berkeley school was more productive in research on rural than on urban landscapes (M. P. Conzen, 1978, p. 130; Whitehand, 1981, p. 12, 1987a, p. 255). All these research schools (shown schematically in figure 1) remained small in their numbers of adherents and publications into the early 1960s. In the later 1960s and early 1970s, research on urban form seemed to be less susceptible to the "quantitative revolution" then dominating social science philosophy and research techniques than were many branches of geography. Nevertheless, this was a period when various quantitative methods were developed, mainly in studies that were largely morphographic, describing physical forms rather than analyzing their origins and development. They were for the most part ahistorical, even when they considered the survival and distribution of historical buildings (Davies, 1968; Johnston, 1969). The development of concepts based on economics and the study of land-use patterns in the United States and their widespread diffusion were contemporary with this phase of geographical urban morphology. The perspective of the urban geographers who adopted these concepts was morphological only in their concern with land-use patterns: "Town plan and building form were generally treated only as land-use containers, if considered at all" (Whitehand, 1987a, p. 255). There were few researchers with a historical perspective on urban form. By 1970, urban morphology was characterized by Carter as a "barren outpost of urban geography" (Carter, 1970). Fourteen years later, his view had apparently not changed greatly, for he regarded the subject as having been largely unaffected by those changing or shifting paradigms which supposedly have dominated geographical methodology. Quantitative analysis merely brushed ineffectually the periphery of morphological studies, while the present destruction of buildings is seen not in terms of its welfare consequences, but rather in its impact on the cultural inheritance. More recent considerations of the structure of socio-political systems and their determinant organisation of space have again had little impact other than



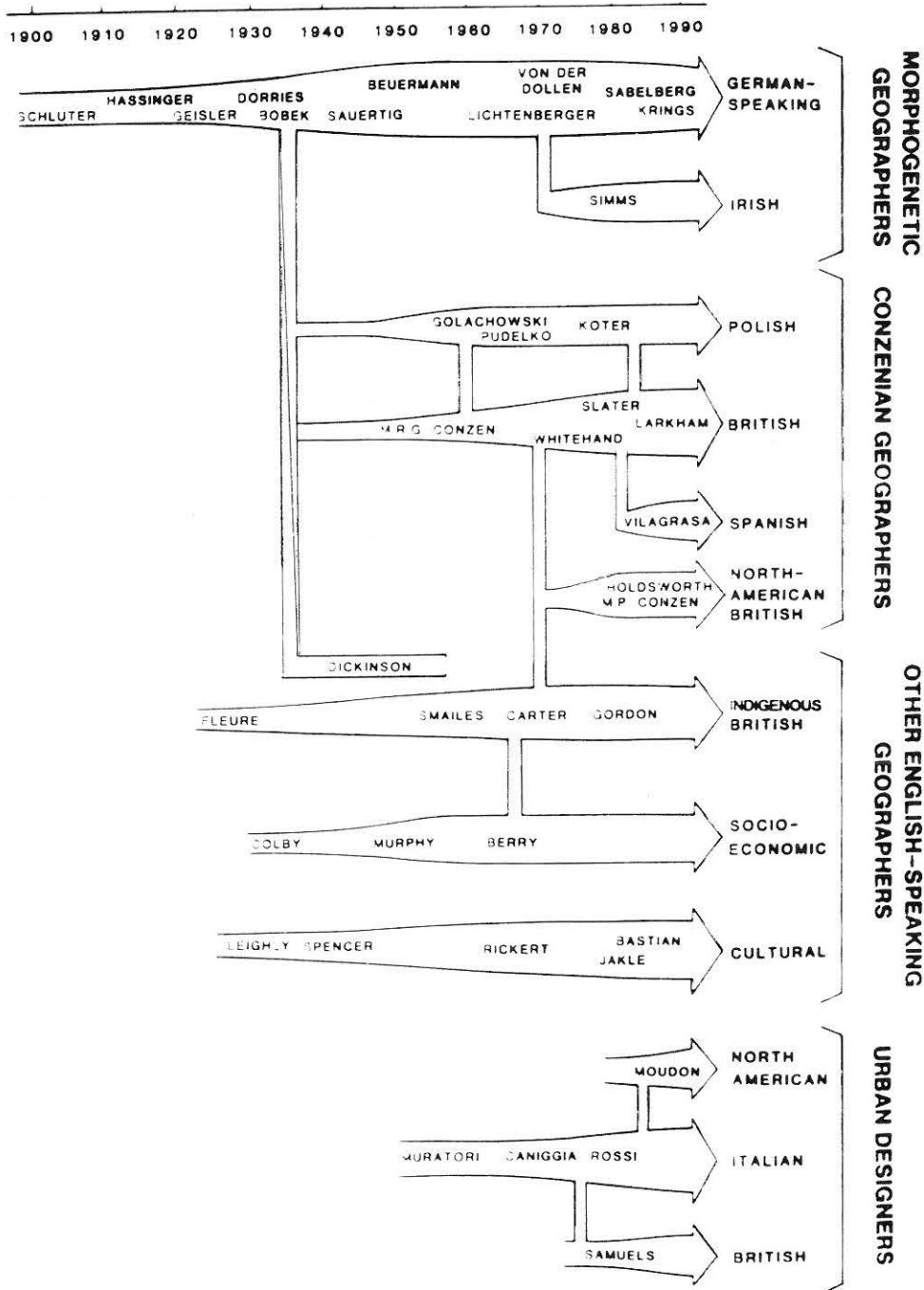


Figure 1. Research traditions in urban morphology: a schematic genealogy, showing a sample of authors. (Reproduced from Whitehand and Larkham (1992, see n. 1.)

on the most general of scales. (Carter, 1984, p. 145)

This passage was quoted recently in a criticism of urban morphology with the comment that, although a harsh judgment, "it does identify, however exact and meticulous the scholarship may be, a lack of reference over a long period . . . to more general trends in urban geography" (Thomas, 1990, p. 133).

Somewhat earlier, however, M. P. Conzen had been able to detect a resurgence of research in urban morphology after a period of quiescence (M. P. Conzen, 1978, p. 135). Publications dealing with the physical form of urban areas (itself an incomplete definition of morphology) became more common during the 1980s, though they still comprised only 12 percent of geographical papers on the internal structure of cities published in the middle of the decade (Whitehand, 1986). By 1994 Conzen could write that "there is more interesting work being done on the landscape character of North American cities by geographers now than at any time in the past" (M. P. Conzen, 1994, p. 771).

In Britain, geographical exploration of urban landscapes has been carried out mainly by the Urban Morphology Research Group (UMRG) in the School of Geography at the University of Birmingham, where a series of projects, broadly linked in methods and objectives, was undertaken (Larkham and Pompa, 1988) (Appendix 1). The *Urban Morphology Newsletter*, edited by T. R. Slater, began regular biannual publication in 1987, with a circulation approaching 200. During the 1980s, growing contacts abroad had encouraged a revival, albeit limited, of urban morphological research in Poland, which had earlier received inspiration from the work of M. R. G. Conzen (Larkham, 1987; Slater, 1989b). In the late 1980s several researchers in northern Spain used approaches developed by M. R. G. Conzen and Whitehand; this research is sufficiently similar to that of the Birmingham group for international comparative projects to be undertaken, such as that by Vilagrassa in 1992. British urban designers and "contextual" architects, occasionally spurred on by the interventions of H.R.H Prince Charles (1989, see also Jencks, 1988), became increasingly aware of the significance of urban history and urban form in designing future urban landscapes. The new academic and professional field of urban design began to use concepts of urban morphology, although some of their definitions and approaches differed from those used in geography.<sup>2</sup> This resurgence in urban morphology, broadly defined, occurred at much the same time as a renewed interest in the significance of "place" in geography (Johnston, 1984, 1991).

### **The Importance of M. R. G. Conzen's Ideas**

The most flourishing research tradition in geographical urban morphology, and the one with the widest distribution of adherents internationally, remains the one derived from the German morphogenetic school introduced into

Britain by M. R. G. Conzen (figure 1). This "Conzenian" tradition deserves elaboration since, directly or indirectly, it turns up in much of the published corpus of urban morphology in the United Kingdom.

Conzen's upbringing and education in Berlin exposed him to a number of perspectives in the arts, humanities, and natural sciences that encouraged a remarkable breadth of vision. A geographer by training, he emigrated to Britain in 1933, on Hitler's accession to power, and became a professional town planner (one of the first to be trained in the new department at the University of Manchester). During the Second World War he accepted an appointment as lecturer in the School of Geography at the University of Manchester directed by H. J. Fleure; after the war he moved to King's College (later the University of Newcastle upon Tyne) where he spent the remainder of his career (Whitehand, 1987b; Slater, 1990a),<sup>3</sup> and continued his research on urban morphogenesis. He produced a map of northeast England showing settlements classified by characteristics of form and period (M. R. G. Conzen, 1949) and undertook detailed plot-by-plot surveys of a number of small British towns. He developed this type of work further, and applied his experience in planning, in his contribution to *A Survey of Whitby*, which was to form the basis for an integrated plan for the town (M. R. G. Conzen, 1958). Evident in his contribution to this project were a concern for the conservation of period buildings and an interest in townscapes as composite historical artifacts (Larkham, 1990, p. 352). His study of Alnwick (M. R. G. Conzen, 1960), a comprehensive and detailed study of the plan of a single town, further refined his survey technique. This monograph, which was innovative in conception and remarkable in its attention to the detail of the town plan, was regarded by the then editor of the Institute of British Geographers as "undoubtedly one of the outstanding research publications of the Institute . . . widely, and favourably, reviewed" (Steel, 1984; see also Slater, 1990a); it was reprinted in slightly modified form, with the important addition of a technical glossary, in 1969 (M. R. G. Conzen, 1969).

A significant part of Conzen's contribution was his conceptualization of the way in which urban forms develop. His development of the concepts of the fringe belt and the burgage cycle and his tripartite division of the urban landscape into town plan, building forms, and land use have been widely accepted as fundamental advances (Whitehand, 1987a, p. 254). The fringe belt is a development of the *Stadtrandzone* identified by Louis (1936) in a study of Berlin. Fringe belts, simply described, are the physical manifestations in the landscape of periods of slow movement or even standstill in the outward extension of the built-up area; they tend to be used initially for purposes requiring large sites and having little need for accessibility to the commercial core. The burgage cycle describes the progressive filling-in of plots with buildings, leading to a climax phase of maximum coverage and, ultimately, the clearance of plots preparatory to redevelopment.

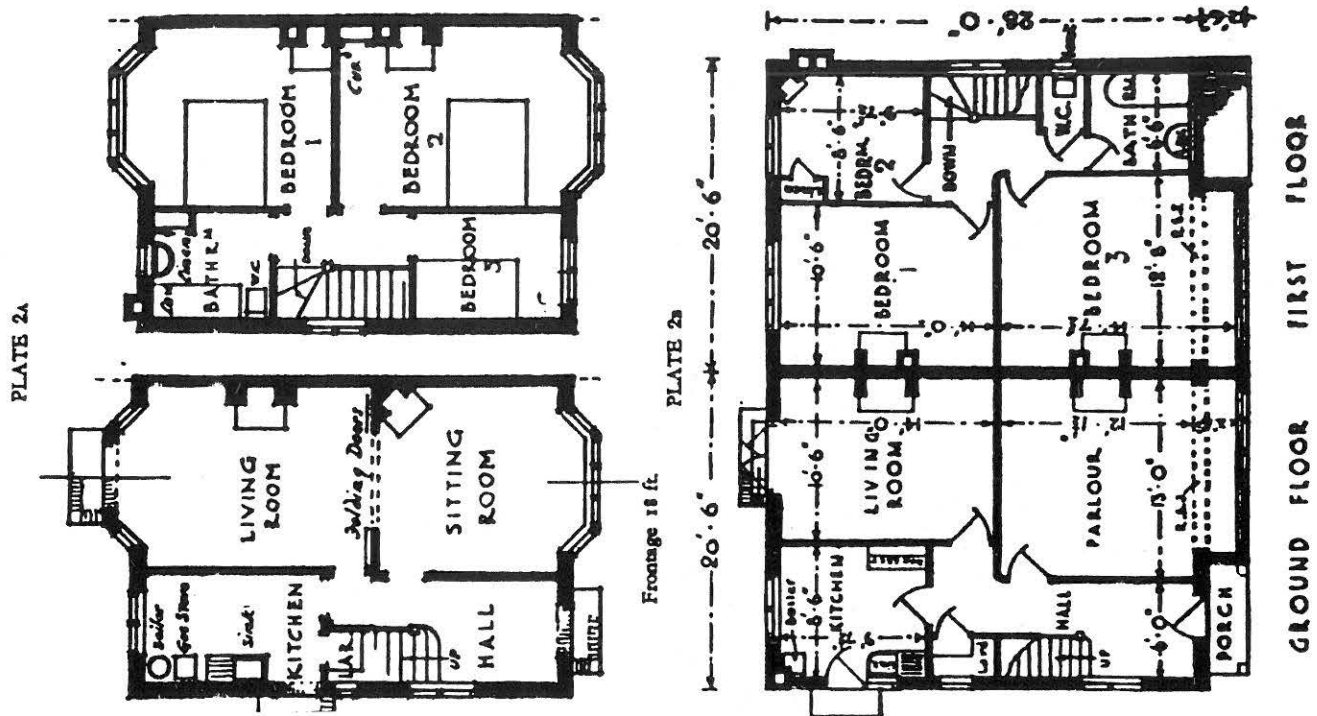
Conzen returned to conservation as a theme in his paper on historical townscapes as a problem in applied geography (M. R. G. Conzen, 1966), using as illustrations some of the small towns that he had surveyed in detail some years earlier. In it he introduced the idea of managing the urban landscape and the key attribute in determining management priorities as historicity or historical expressiveness. The nature and intensity of historicity he expressed in practical terms by dividing management into the three basic form complexes—town plan, building forms, and land use—which he regarded as to some extent a hierarchy in which the building forms are contained within the plots or land-use units, which are in turn set in the framework of the town plan. These three form complexes, together with the site, combine at the most local level to produce the smallest, morphologically homogeneous areas that might be termed “urban landscape cells.” These cells are grouped into urban landscape units, which in turn combine at different levels of integration to form a hierarchy of intra-urban regions. The hierarchy of units is the geographical manifestation of the historical development of the urban landscape and encapsulates its historicity. It provides the reference point for all proposals for urban landscape change (M. R. G. Conzen, 1975). These ideas on conservation and historical townscape are further discussed in Larkham (1990).

A number of current lines of research on urban form by geographers in the UMRG stem directly or indirectly from Conzen’s ideas. Three of the most important are concerned with the nature and amounts of urban landscape change, especially viewed over long time spans, the agents involved in the process of change, and the management of that change. In all cases there is a concern with features in the urban landscape that have been created by previous generations: the influence of the “morphological frame” on subsequent developments is a recurrent theme (Larkham, 1995).

The first of these lines of research builds directly upon the concern for history, through the analysis of historical, usually medieval, towns. A combination of historical documentation and plan analysis leads to a more thorough understanding of the development of current urban landscapes (M. R. G. Conzen, 1988). In particular, the practices of medieval town planning are examined in detail by using, for example, the relative sizes and shapes of individual plots (or burgages) as clues to successive phases of planning, and by studying the differences between the ideal and reality in the layout of towns (Slater, 1987, 1988a, 1990c). Some of the towns that have been studied in this way are not commonly perceived as being of historical interest, because their medieval features may have been largely destroyed by industrial growth, as was the case with Wolverhampton and Doncaster (Slater, 1986, 1989a). The refinement of rigorous and replicable analytical techniques is an important facet of this work (Baker and Slater, 1992; Lilley, 1995).

In the second line of research, the study of urban landscapes has been linked more explicitly to the types of agents and the specific organizations and





individuals responsible for their creation. Attention has centered on the period since the mid-nineteenth century, when sources permitting detailed building-by-building analyses became available in the form of building plans submitted to local authorities (Aspinall and Whitehand, 1980). For the post-1947 period, similar data have been recovered from the records of local authority planning departments (Larkham 1988b). Using such data sources, reconstructions of urban development of unparalleled detail and completeness have been pieced together, sometimes for quite lengthy periods (Whitehand, 1987c, 1992).

These types of detailed data have aided greatly a third strand of current research, namely planning, or management of, the urban landscape. The processes of decision-making are reconstructed, the agents (where surviving) are interviewed, and management procedures and policies are examined. This type of research has been successfully carried out on commercial cores and residential areas, with particular emphasis on conservation (Freeman, 1988; Larkham, 1988a, 1992; Whitehand, 1990; Whitehand, Larkham and Jones, 1992). Combining it with work in other disciplines, most notably urban planning and design, has allowed a critique of the detailed operation of the English planning system (Whitehand and Larkham, 1991a, 1991b). This inter-disciplinary link can be seen in the references to UMRG research by the practitioners Lowndes and Murray (1988).

### Typo-morphology in the United Kingdom

Even a cursory glance at the literature in architectural, planning and social history over the past two decades will show that studies of building typology are increasingly popular. It is from these disciplines, but particularly from architectural history, that the most significant studies of building types have

Figure 2. Ground plan for standard semi-detached house, 1930s. The so-called Universal Plan. (Reproduced from House Building 1934-36, also reprinted in Oliver et al., 1981.)

emerged.

One classic study is Brunskill's *Handbook of Vernacular Architecture* (1978). Dealing only with one set of buildings in a largely rural vernacular tradition, this handbook enables the non-specialist or student to identify and classify buildings from external characteristics alone. Both form and function are discussed, and dating guidelines from building materials, styles and details are provided. Its relevance here is the emphasis placed upon the building plan, especially in the section on "plan-form families", which allowed a typology of English rural vernacular buildings—particularly farmhouses—to be developed ranging from long-houses (house plus barn in line) to double-pile (double depth, marked by two roof ridges) Victorian structures. This is a practical book, but immense amounts of observation and scholarship are reflected in it.

No less scholarly are the numerous volumes devoted to particular types, of which recent examples include the terraced house (Muthesius, 1982), the Edwardian house (Long, 1993), the inter-war semi-detached (Oliver et al., 1981), the town hall (Cunningham, 1981), and the tower block (Glendinning and Muthesius, 1994). None of these volumes is written by scholars who consider themselves urban morphologists or for a morphological readership, and all of them illuminate the building type's origins, form, construction, structure, details, décor, and users to a greater or lesser degree in terms of typology. In this they are generally frustrating. Dealing with such broadly defined building forms, they find it difficult to identify archetypes ("the original pattern or model," as *Chambers's Twentieth Century Dictionary*, 1901 edition, defines it). They also seem reluctant to discuss them in terms of the more recent use of archetype as the "typical specimen": although Oliver et al. (1981) deal with a standard building type, with a common (if not universal) floor plan (figure 2), the thrust of their volume is to identify variety in inter-war suburbia, despite its denigration by John Betjeman ("Come, friendly bombs, and fall on Slough; It isn't fit for humans now..." [Betjeman, 1937]), Osbert Lancaster, and others. Two examples from this architectural art-historical tradition will serve to show the approaches used, and their failings from the morphological and typological viewpoint. Long's book on the Edwardian house (1993) is both closely researched and scholarly, but also morphologically frustrating. Four introductory chapters illustrate the development of taste in the period, setting it clearly in its Victorian context and usefully reminding us of new developments in shaping taste—large-circulation magazines, books on tasteful decoration and domestic management, etc. The introduction also covers the contemporary growth in middle-class suburbia, and the trades and means of production employed. Little is new in this section, particularly as the whole thrust of the book is on the middle-class Edwardians and their houses. Yet the middle classes are difficult to define, as is the era itself (p. 5). The study of "the dissemination of taste" requires a far more thorough treatment; it is a useful foretaste but frustrating in its brevity and selectivity. Chapter 3 does contain some new

material, with case studies on parts of Cardiff and London; again, particularly for the morphologist, these are fascinating but frustrating in their brevity. The second and main part of the volume deals with the form of the Edwardian house and its components, with chapters on specific interior and exterior features—doors, porches, fireplaces, lighting, heating and plumbing, and more. This section is more comprehensive and more confidently handled, as it is drawn directly from the author's Ph.D. thesis, "The British Domestic Interior 1880-1914." Extensive textual and illustrative use is made of contemporary trade journals and catalogues. But there are few details on floor plans and layouts; captions on some illustrations do not identify location, date, architect, or builder. More problematic, perhaps, is that this is emphatically not a book on the Edwardian house, but a useful and interesting book on the middle-class Edwardian, mainly large detached or semi-detached house. Mansion apartment blocks, garden suburbs, and terraces are not mentioned; there is little discussion of differences between speculative and bespoke, owner-occupation and rental development. This is introductory or contextual material which would greatly assist, but not materially further, a typological study of even Edwardian middle-class villas. The second example is the study of tower blocks by Glendinning and Muthesius (1994), which is perhaps even more thorough and well-researched than Long's book. One of its key aims is to document the forces shaping the tower block and allowing its rapid spread across the country. It suggests that the local authority-led drive for higher numbers of dwellings produced the contractor-led prefabricated design-and-build solution that supplanted the individual architect-designed, site-specific scheme, even though those could also have used prefabrication. Interviews and contemporary documentation support their assertion. The volume contains a comprehensive gazetteer and many photographs (often contemporary), plans, and diagrams. The typologist is thus given far more ammunition than in Long's work, with the gazetteer being particularly useful in guiding specialist follow-up examinations. There is an added typological bonus in that the authors do identify and give considerable space to "typical" blocks and schemes, sometimes architecturally of poor quality, in addition to architecturally innovative and otherwise atypical developments. Interestingly, one reviewer of this volume remarks that she sometimes found herself "uncomfortable with this qualitative levelling" (Kay, 1995, p. 144).

### **Approaches in Geographical Urban Morphology**

Geographical urban morphology in the United Kingdom has not dealt in detail with individual building types; geographical, as opposed to architectural, influence has dominated. There is no parallel to the detailed evolutionary typological research that has developed in, for example, Italy, and its close links with planning and architectural practice. Even studies

which have identified building types and illustrated typical examples have been concerned more with historico-geographical process at the city scale than with building typology. M. R. G. Conzen, for example, discussed the generalities of industrial dwelling types in the industrial era in the United Kingdom (M. R. G. Conzen, 1981; see also 1952) and Slater studied the growth of the "ornamental villa" on the Victorian urban fringe (Slater, 1978), but these two works are unusual. More consideration has been extended to architectural styles and the processes whereby they may change from one period to another, particularly in the well-documented twentieth century (e.g., Whitehand, 1984; Larkham and Freeman, 1988). However, geographical bias has also led to a number of studies on plot typology and developer strategies that lead to particular estate typologies.

The plot typology thread developed directly from M. R. G. Conzen's conception of the burgage cycle (Conzen, 1962). Plots were laid out in urban and suburban areas from the medieval period, often with considerable regularity, and thereafter metamorphose. Narrow but deep medieval burgages, particularly when alleyways give rear access, may be subdivided laterally. Alternatively, burgages could be divided medially to give yet narrower plots. Changing uses over time lead to increasing building coverage, with rear extensions and outbuildings. Eventually, a high point of coverage occurs, which may be 100 percent of the plot; thereafter buildings may be cleared and redevelopment occurs (fig. 3). In the twentieth century in particular, large-scale redevelopments have led to the amalgamation of earlier plots (Whitehand, 1988) and the institution of new plot series, or comprehensive town-center redevelopment has produced new urban forms that lack separate plots. Subtle differences in the proportions of plots laid out at different times has led to the identification of separate plan units, particularly in studies of medieval towns (e.g., Slater, 1989a; Lilley, 1995). Outside the United Kingdom, but working squarely in the Conzenian tradition, Koter (1990) has shown similar trends in the planned plot series of the Polish industrial town of Łódź.

Studies of development in English suburbs show processes similar to the burgage cycle in that residential plots may be amalgamated or subdivided during periods of complete or partial redevelopment (Pompa, 1988; Jones, 1991). Developers have used various strategies to increase residential densities even in planned residential layouts, often through patient assembling of a developable site through a lengthy period of piecemeal purchase. Rear gardens of long plots are particularly vulnerable to these processes, with the occasional original house being purchased and demolished to form a driveway to the new "backland" housing estate (Larkham and Jones, 1993) (figure 4).

These studies deal with plot and development typology only implicitly. As with the non-geographical tradition, very rarely is there explicit reference to a type or archetype. Although it is sometimes suggested that the forms or processes examined are "representative" or "typical", the statement is rarely



statistically substantiated. The only study in geographical urban morphology to deal with typology as a concept is Kropf's comparison of Conzen's work with that of the Italian architect and typologist Gianfranco Caniggia (Kropf, 1993), in which Kropf makes the useful distinction between levels of resolution and levels of specificity. Streets and buildings are elements of the urban fabric identifiable at one level of resolution; plan units are at another level. Street types can be identified at different levels of specificity using, for example, widths, block sizes, associated landscaping, or other features. This work represents a great advance in bringing the complex conceptions of typology into geographical urban morphology, but it is not widely available in print and needs further elaboration in its practical applications.

### The Concept of Type and Archetype

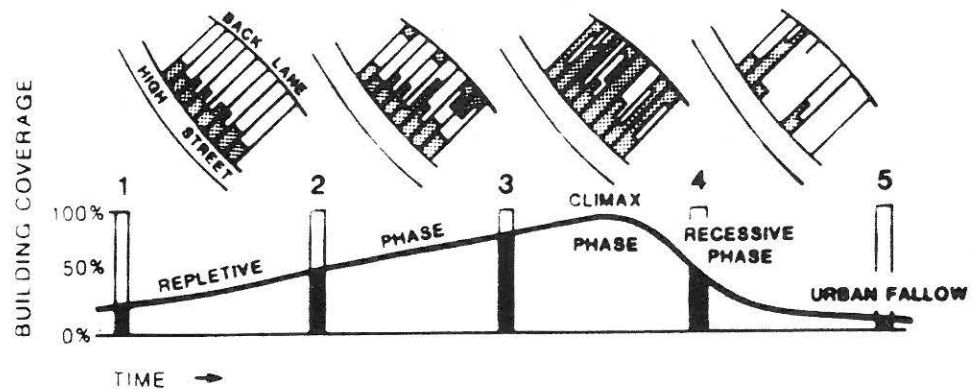
The concepts of "type" and "archetype" are relatively unfamiliar in geography because descriptive and analytical techniques rarely need to refer to "types" or typical examples; far more common are references to published case studies relevant to the concept or area studied. Type is much more familiar in palaeontology, where a "type fossil" is a widely recognized term for the actual specimen first discovered or described and named, to which reference is then made when attempting to verify the identity of later specimens.

Type is more widely used in architecture, particularly in studies of architectural history, not least because of the popularly used (although hardly technical) term "building type". Here, too, may be found rare but explicit mention of "archetypes" as, for example, in the comment that the medieval form and image of Salisbury Cathedral was a powerful archetype influencing nineteenth-century architecture (and, probably, church restoration) (Brock, 1994, p. 204).

A further example of potential linguistic confusion occurs in Markus's review of building form and power relations (particularly in terms of users versus staff). This is an interesting and innovative view of building morphology, potentially of considerable use to urban morphologists. In discussing the library as a built form, he states that "its antiquity and epistemological totality makes the library an *archetype*. And since from the beginning other objects of knowledge were stored with the books it is also a *prototype* of the later museum and art gallery" (Markus, 1993, p. 172).

One of the main problems for the development of typological or typomorphological studies will therefore be the dissemination of the technical concepts and terms into the disciplines most likely to benefit from their wider use. Unfortunately, this is unlikely to prove easy. Problems of international, intra- and inter-disciplinary terminological misunderstandings prompted M. R. G. Conzen to add a substantial technical glossary to the

Figure 3. Idealized plot redevelopment cycle. (Redrawn after M. R. G. Conzen, 1962.)



second edition of his monograph on Alnwick (M. R. G. Conzen, 1969); a repetition of the same problems in the same areas (English and German-speaking urban history and geography) during the Third Anglo-German Seminar on Urban Historical Geography in 1988 led to the *Glossary of Urban Form* (Larkham and Jones, 1991).

### Typology, Morphology, and Its Wider Relevance

The Conzenian tradition of geographical urban morphology as practiced by members of the UMRG offers a rich body of theoretical concepts relevant to the historical study and potential future management of urban form. Typology is a recent introduction to this research tradition, but there is considerable potential in developing these concepts within the geographical approach while using the equally rich body of studies in the non-geographical, architecture-art-historical tradition as a vital information source. Moudon considers that a developed typo-morphology would offer practitioners "a rich data base on forms and form-making processes. And, more importantly, morphogenetic research grounds this design work in the history of city building. Types no longer need to be arbitrarily borrowed icons" (Moudon, 1994). This could be useful at a time when new urban forms and post-modern architecture in general appear to be borrowing almost at random from past urban and building types, with varying degrees of accuracy, but often merely to put a superficial stylistic gloss on standardized design solutions. Quinlan Terry's Richmond Riverside development in London, for example, clads speculative open-plan office space in a veneer of Georgian classicism, while Duany and Plater-Zyberk's Seaside is an exclusive resort for the wealthy clad in a particular conception of the appearance of the "typical" small American town.

Unfortunately, few practicing urban designers and planners are aware of the UMRG's body of research. Of those who are, many assert that its thoroughness precludes its use in practice or suggest that it is useful only



Figure 4. Plot redevelopment typology: examples of plot truncation and amalgamation during piecemeal redevelopment, Northwood, London. (Reproduced from Larkham and Jones, 1992.)

for managing historic urban landscapes (Samuels 1985, 1990; Bandini, 1984). English Heritage, a government agency, has dismissed it as being too complex a set of ideas even for historic towns (B. Hennessy, English Heritage, pers. comm., 1992). The challenge is thus to “operationalize” typomorphology in terms acceptable to practice in the United Kingdom. The irony is that Kropf has begun to do so, but in the very different social and legal context of preparing the Plan d’Occupation des Sols for a small French commune (Kropf, 1993; Samuels, 1993).

It is promising that some aspects of the typo-morphological debate have appeared in the pages of the most relevant professional journal in the United Kingdom, *Urban Design Quarterly*, the journal of the Urban Design Group.<sup>4</sup> Although Lane’s brief commentary was incomplete and contained errors (Lane, 1991; also n. 3), it did spur two responses (Kropf and Samuels, 1991; Hubbard, 1992). Lane suggested that typo-morphological studies of urban

fabrics could provide a comprehensive method for analysis and could suggest appropriate design solutions. Both responses, however, agreed that urban morphology and, by extension, typo-morphology, are essentially descriptive analysis and thus meta-discourse to criticism and design; morphological analysis alone need not necessarily yield any, or suitable, design solutions. A promising development would be to combine typo-morphology's detailed analysis of the history, development, and form of the physical fabric with systematic assessment of the qualities associated with such forms (e.g., Gebauer, 1983) and exploration of the expectations, or "social landscapes," of the user groups (Donovan, 1994) before proceeding to design solutions. In this manner, typo-morphology would be a positive component of the process of urban design (cf. Moudon, 1992, fig. 1 and p. 342). Such dialogues are far more advanced in Italy and France than in the United Kingdom. Thus the work of Kropf is again welcome and requires dissemination, and the first hesitant steps towards a European academic network, which held its first meeting in Lausanne in summer 1994 (spurred by Anne Vernez Moudon), must be encouraged.

### Notes

<sup>1</sup> Part of this paper is adapted from J. W. R. Whitehand and P. J. Larkham, "The Urban Landscape: Issues and Perspectives," in J. W. R. Whitehand and P. J. Larkham, eds., *Urban Landscapes: International Perspectives* (London: Routledge, 1992).

<sup>2</sup> Urban-design literature defines "urban morphology" as "... a method of analysis which is basic to find[ing] out principles or rules of urban design" (Gebauer and Samuels, 1981); Lowndes and Murray (1988) use it in this manner. In conversation with the author in 1994, Kevin Murray noted that his ideas had developed significantly since that 1988 paper, but these developments have not been written up for publication. Gebauer and Samuels also note that the term can be understood as the study of the physical and spatial characteristics of the whole urban structure, which is closer to the geographers' definition.

<sup>3</sup> Biographical information on M. R. G. Conzen is drawn from the published sources cited and a 3-hour videotaped interview between Conzen, Whitehand, and Slater. The videotape and a 1-hour edited version are available from Dr. T. R. Slater, School of Geography, University of Birmingham, Edgbaston, Birmingham, U.K.

<sup>4</sup> "By the mid-1970s the planning profession had become process and systems orientated with the processes strongly socio-economic and the systems essentially political. The architectural profession in the meantime was raising barriers and establishing definitive positions in order to fight the aesthetic control of its designs. The third major environmental profession, landscape architecture, was not involved to a significant extent in the urban debate. The discontent amongst a group of professionals resulted in the founding of the Urban Design Group in 1978. . . . [The Group] considered that everyone acting in the environment were urban designers, be they performing positively, negatively or just passively, because the decisions they make (or disregard), affect the quality of urban spaces" (Linden and Billingham, 1994, p. 30).



## Appendix 1

### *Funded Research Projects Undertaken at the UMRG from 1980 to May 1996*

- J. W. R. Whitehand, P. J. Aspinall and S. M. Whitehand, Investigation of changes in the town centers of Northampton and Watford, 1916-79 (Social Science Research Council)
- J. W. R. Whitehand and P.J. Larkham, Post-war changes in mature residential landscapes: comparison of the South-East and Midland regions of England (Leverhulme Trust)
- P. J. Larkham, Managing historic townscapes (British Academy)
- T. R. Slater and N. J. Baker (jointly with the School of History), Mediaeval towns and the church (Leverhulme Trust)
- J. W. R. Whitehand and C. Carr, The changing English suburb (Leverhulme Trust)
- T. R. Slater and K. D. Lilley, The Norman town in England, Wales and Ireland (Leverhulme Trust)
- T. R. Slater and J. Higgins, Economic change and built form: early-modern Shrewsbury (Leverhulme Trust)
- J. W. R. Whitehand and S. W. Marshall, Built form and control in Category C prisons (Home Office)
- J. W. R. Whitehand, I. Samuels, and K. S. Kropf, The description and prescription of urban form (Leverhulme Trust)

### *Higher-Degree Theses Submitted by UMRG Members from 1980 to the Present*

- R. F. Broaderwick (1981). "An investigation into the location of institutional land uses in Birmingham" (Ph.D.)
- R. J. Talbot (1984). "The analysis of the modern residential townscape: a comparative study of 52 settlements in northern England and southern Scotland" (Ph.D.)
- M. Freeman (1986). "The nature and agents of central-area change: a case study of Aylesbury and Wembley town centres, 1935 to 1983" (Ph.D.)
- P. J. Larkham (1986). "Conservation, planning, and morphology in West Midlands conservation areas, 1968-84" (Ph.D.)
- T. R. Slater (1986). "Studies of the genesis and morphology of British towns" (Ph.D.)
- I. A. Thompson (1987). "An investigation into the development of the building fabric of Huddersfield's CBD 1869-1939" (Ph.D.)
- N. D. Pompa (1988). "The nature and agents of change in the residential townscape: South Birmingham 1970-85" (Ph.D.)
- P. N. Booth (1989). "Owners, solicitors and residential development: the case of a Manchester suburb" (M.Phil.)
- A. N. Jones (1991). "The management of residential townscapes" (PhD)
- J. C. Horn (1992). "Townscape transformations in dockland areas: case studies in the UK" (Ph.D.)
- K. S. Kropf (1993). "An inquiry into the definition of built form in urban morphology" (Ph.D.).
- J. Hubbard (1994). "Attitudes to redevelopment in Birmingham city centre: an examination of architectural interpretations" (Ph.D.)
- T. R. Hall (1994). "Urban regeneration and cultural geography: the International Convention Centre, Birmingham" (Ph.D.)
- K. D. Lilley (1995). "Mediaeval Coventry: a study in town plan analysis" (Ph.D.)

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*Maurice Cerasi*

## **Type, Urban Context, and Language in Conflict**

Some methodological implications

The typological approach to architecture has remarkable potentiality but it has to change in order to exploit it fully.

The typological concepts developed in Europe in the Fifties and Sixties have afforded us instruments which had not pertained, up to then, to the field of architecture proper. The relationship of town structure to building types, the emergence of architectural forms through slow and long processes of sedimentation both cultural and physical (through change and transformation of the elements of town structure) and the very notion of an "architecture of the town" were well known to the historian from Fustel de Coulanges to Lavedan, from Von Gerkan to Roland Martin, from Gantner to Lavedan. But they had been so far assumed by architects intuitively, not systematically. And not by all.

The work of the Italian school, in the first place of Muratori and later of the Milanese-Venetian school, with Aldo Rossi as its leading theoretician, was revolutionary. Not so much in the conceptual categories it introduced — which, I repeat, were not at all new for the international community of historians and archeologists — as in the use it made of these categories establishing new references for architectural design.

Their success was due to the epochal change in architects' mentality that no longer made 'tabula rasa' of historical town structures and textures but sought ways and means for obtaining continuity with the past of town and architecture. In those years architects were only mildly 'Modernist' and all vestiges of 'futurist' feeling had vanished. On the other hand the recurrent terms of 'feeling for' and 'sense of place and environment' had proved too inconsistent to substitute 'Modernism's strong philosophy and too vague to be used either for analysis or communication.

It was at this stage that the 'typology-morphology' school of thought gave new impulse to research both creative and scientific.

It certainly introduced objective criteria and instruments for the judgment of plans, volumes and some aspects of architectural form in the urban context.

The point of emphasis on type for the acting architect is that it allows him awareness of the deeper structures of his own design processes, of their roots in repeated collective, social proceedings.

The attention to typical plan, to the orientation and layout of street grids, to the town plan as expression of an approach in the relationship of each



*The Town Hall of  
Augsburg, Germany.*



building to its context, to elements and alignments which 'generate' form and plan, to the specificity of region and town had great pedagogical impact. And not only in education. It taught acting architects to look at context not as a fascinating if mysteriously compact and inarticulate entity, but as an objectively definable and articulate reality which could be explained through its elements, and through their interplay in the multiple processes of formation of that reality.

But there it stopped.

Why has that school of thought lost its fascination on the later generations? Why have some of its more active members concentrated on professional and esthetic achievement, losing much if not all interest in analysis and theory? Biography of school and individual is irrelevant. The fact is that methods and theoretical approach had fallen short of the aim of giving architects, practitioners or theoreticians, an effective working instrument. First came the too obvious discovery that such methods, at their state of development, could not be used beyond the very first steps of any creative process.

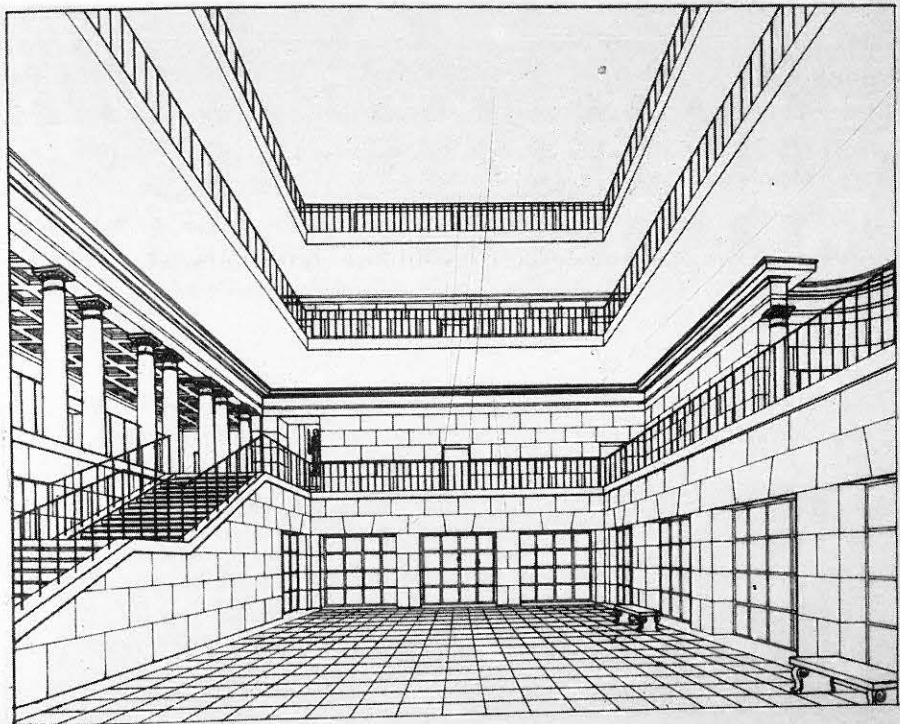
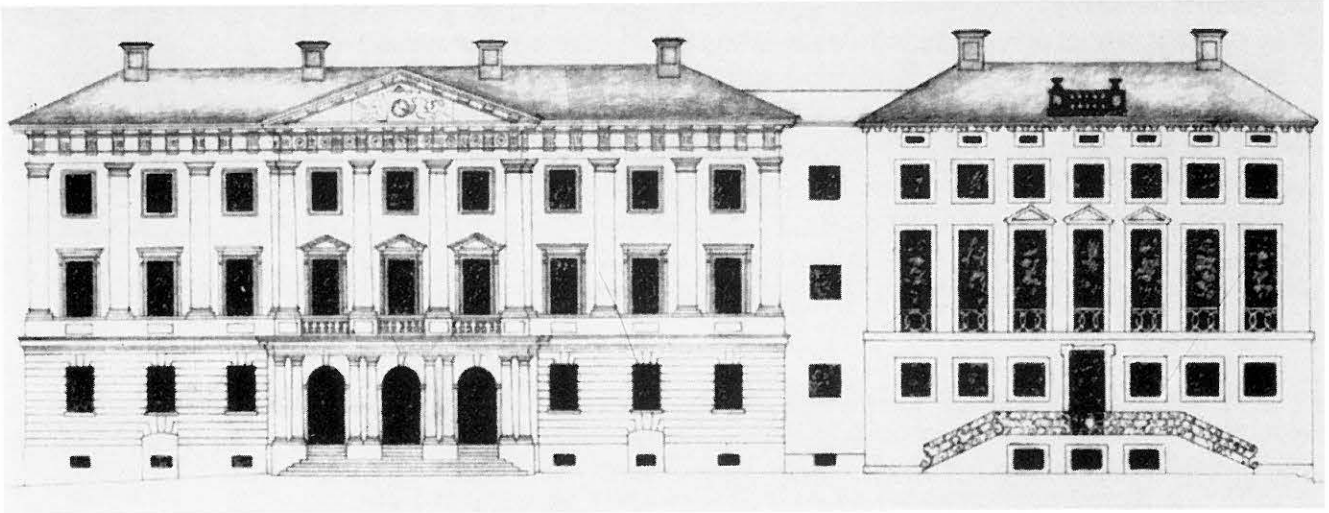
They would not grasp complexity. One of the principal cultural assets of that approach — its capability to define the multiple processes of formation of architectural reality — had been undervalued by the same men who had pioneered in typological research and had been used very little. Type analysis was descriptive and often tautological: it unveiled what was already known and perceivable.

The categories referred to were too simple, too rigid and too deterministic to account for the linkage of type (and hence town history) to language and meaning.

Although not explicitly declared, the typo-morphological school did imply a general theory of architecture. But it was never declared. Since the XIXth century there has been no general theory of architecture and we probably shall have none in the coming years. (The ethical or vitalistic theories of the first half of XXth century — which dealt with how architecture should be and not with how it is — have not touched the argument of how architecture comes to being.

The typo-morphological school seemed to assume type as a point of equilibrium in historical development; in other words, as an organism which is born, changes and dies as a whole; language being incorporated in it and its relation to context being predetermined in its nature as a type. The implication was that a type would maintain certain well-defined characteristics until it changed completely.

After all, a large number of architectural historians of the late XIXth and early XXth centuries had shared this point of view. Both schools had a strong distaste for breaking up the individual work of architecture into the fragments, etymon, morphemes of which it is a compound. Both were reluctant to acknowledge the importance of archetypes and of loanwords (to use again the terminology of linguistics), that is of elements which reach



*The extension of the Town Hall of Goteborg, Sweden by Gunnar Asplund. The facade of the earlier version and the interior of the court.*

out from the past and from distant cultures, from a sort of architectural subconscious. To acknowledge such complexity and apparent irrationality was considered a danger for the noble individuality and integrity of the work of art.

In other words, it was postulated that architects (whether individual or collective) create or inherit typological solutions as deeply unitarian works of art, which cannot or should not be dismantled or used partially.

This attitude misrepresented the course of history. Gradual transformation and separateness of levels of decision and sensibility are part of architecture's reality.

I would like to discuss very briefly some situations of typological transition in which the divarication of plan, volume and language is easier to analyze. (This divarication does exist also in more stable and historically persistent types but is of course much less evident).

I am thinking of the French Renaissance up to Philibert de l'Orme and of German 'bourgeois' housing up to Elias Holl. In both cases Italian Renaissance concepts were applied to facades and detail but late gothic plan and volume typology were kept. Change in the basic concept of house or palace gathered momentum gradually, at different speeds for different levels. In both cases the typological concept of the house or palace did not change at once but accumulated differential factors, at first at superficial levels and later at structural levels until each type was transformed completely.

The drawings of de l'Orme show how his work incorporated artisanal late Gothic techniques (the wooden arch construction, his own house's combination of various volumes and accessories) in contemporary post-Gothic types or, vice versa, contained Renaissance composition techniques and articulation in apparently still Gothic types.

During the evolution of Sixteenth and early Seventeenth century German town architecture which culminated in Elias Holl's Augsburg town hall, previous combination of Gothic (in volume and response to urban context, and sometimes in layout) to Renaissance (in ornament and composition and again sometimes in layout) gave way to a new synthesis of type and language which still contained many elements of both periods.

We observe a similar process in the synthesis which produced the late Ottoman house. Here the transformation is due to many overlapping phases and components. We see the type change softly (through almost imperceivable transitions as in a high-tech video effect) from a model wholly non-European to a final product which could easily be imagined in a Western context. Here too — it has often been held — change in taste and in so-called 'superficial' elements had brought about a total transformation of the basic type which thereby was supposed to lose its 'real' historical character. That is not my point of view. In the design process, 'types' (i.e. a given combination of architectural factors) have no 'original' character to lose but fall upon new aggregates or new combinations in the course of a



*The extension of the Town Hall of Goteborg, Sweden by Gunnar Asplund. The facade of the final solution and the interior of the court.*

creative movement of long duration.

Another apparently fringe situation example is the Ottoman imitation of Saint Sophia's plan, inner volume and (partly) technology but not of its language and meaning. This is no matter of deeply felt cultural influence but of a determined reuse (or reappropriation) of selected elements from a distant (and dead) culture. Which proves that architecture can be fragmented and disarticulated.

I could mention, though in a very different context, Asplund's projects for the Goteborg court of justice. In the two versions of the project the main hall has a similar though varying dimension, comparable overall space concept and role in the distribution and articulation of the building. The older version is neo-classical in an eclectic way, the second modernist. Forms and lighting have brought about a change in meaning and not only in style; and yet the spatial type has not changed radically. This may sound a paradox but it could be said that type, in a general sense, has not changed and yet the archetypes are not the same: in the first version we have the idea (not the type) of the grotto-like atrium, in the second, transparencies and ample column rhythms produce a 'piazza' or open space-like version of the inner volume. In a deeply ethical architect such as Asplund this is no mere infatuation for a new style or trend. Nor is it the rejection of previous attitudes. His thought on the site and on the character of the building have matured but not changed. It is above all, a long reflection on that which is important in architecture and that which is not, on what can be changed and what should not... on that which can be separated... All this amounts to an analysis of architecture and of its roots and is very far from the classical typological approach.

Many critics would see in such examples as those I have given, the signs of eclecticism whereas each of them simply reflect their architect's struggle to give form to conflicting forces in his heritage. General types, language, spatial concepts have always been in conflict or, to put it in a different way, have had each a different rhythm of change. These 'glissandi' from one decisional level to another, these hidden or evident contradictions are part of the creative design process which is neither totally anchored in urban structure and typological tradition nor totally free of them. There is in architecture an inner tension and an interplay of forces which come from contrasting or converging but heterogeneous ideas even within a given typological concept. They pertain to style and language, to personality. They play on a substratus of collective acts (memory of the locus, the peculiar mode of each city to become an immense pedagogical building site, a workshop for future architecture).

It is therefore impossible to paraphrase within the bounds of a 'type' the specific vitality of each building, rooted as it is in the micro-history of material contingencies and of sensuous love for materials and forms not less than in general concepts.

What happens within an architectural body can be referred only very vaguely



to the concepts of type (to belong to the same type how many parts of that body should resemble other bodies?), context (where does that body stop and where does its outer context start? does it not condition and reform its own context?), language (on which elements is its language based and to what degree can it be separated from its typological 'hanger' and from its response to context?).

Architecture's complexity is in its making. Architects accept, reject or re-elaborate more conflicting concepts extant in their 'milieu', town or cultural heritage than they are consciously aware of. To understand the making of architecture we must understand those clashing forces and the mechanisms of their unification.

When applied to active design or to education, theories such as Muratori's or Rossi's imply analysis 'a priori' (prior to invention) as a set of rules and guidelines both for the interpretation of the urban and cultural context and for the project.

At their best, their conception of the unity of types as a point of equilibrium, for the acting architect meant striving for total coherence in each project, trying to bolt down 'type' as the final response to a given design problem. At their worse they brought the arbitrary assumption that a typological repertory should always be derived from the tradition and history of an urban context, that is, that only certain types should be designed in that given context.

I believe that an analysis which operates 'a posteriori' on concepts in the making, would fit better the design process — whether individual or collective — and its erratic progression. After all, criticism (self-criticism) is functional to the design process as well as to any creative process. Both the active architect and the historian are not looking for rules but trying to understand the making of architecture and its inner logic.

From this point of view I find very interesting Bruno Fortier's insistence on the analysis of the single 'locus' and of the specific architectural work, apparently in contrast with the classical typo-morphological approach but actually bringing new blood to it.

This may sound blasphemous, but a partial return to XIXth century academicism's (Durand et al) exploded view of architecture — in which plan, elevation, distribution, language were analyzed separately — might suggest new methods of analysis of typology; of course, if we set aside the too facile design rules of that period and its inveterate eclecticism. This might overcome basic typological approach's tendency to conceive type as a unit and consequently as monolithic, non-fissile material.

Fundamentally, the question is how to render typological analysis systematic and yet keep it close to the nebulous constitution of architecture.

Typological research has yet to acquire its exact role, place and interaction in the design process. But we should try to keep the imperfect categories of 'type', context and 'language' nearer to the live processes of the project. Used in a deterministic way the concept of 'type' is inhibitory.

On the other hand, we cannot accept the definite loss of its role in our architectural thought: it would mean capitulation to purely intuitive and irrational creation and to the never dead moronic love for freedom from all conceptual discipline.

I find it promising and liberating that typological factors, fragments of type derived from analysis be involved in the construction of the project because it frees language from unnecessary subjectivism and rhetorics. Implicitly this has been Le Corbusier's working procedure in purging himself of the formal conformism of his time though it is true that he applied such piecemeal analysis to works of architecture and buildings distant in time and culture and that his aim was to disrupt the structure of the contemporary Western town. More recently, others have moved from the opposed position, applying that same quest to the contemporary city's image and types. However this search has often become a sort of razor's edge venture between subjectivism and systematic analysis.

Take Alvaro de Siza. His 'artistry' has played more than once on the negation-affirmation-negation of type. He has often used a given type as a starting point, free to transform its basic concepts and its technology. In his Evora housing, in Berlin's 'Bonjour Tristesse' and in the unbuilt Kreuzberg corner house, he has taken given types of each of those contexts and deformed certain of their characteristics and introduced innovations. He probably did this to extol the linkage of his buildings to their built context and to enforce his own personal language. He used type as semantic structures or as partial meaning enforcing instruments, strengthening his overall poetical devices. (The substantial homogeneity of his site-analysis and of his project sketches seem to prove this. Apparently not interested in historicist or theoretical procedures, nevertheless his trained eye squeezes out pertinent though unsystematic observations on the character of types.)

Unfortunately, in less gifted and not so well-trained hands, similar proceedings either fall short of their aim or become too emphatic. Many a mediocre project has taken up, say, a current terrace housing type, adding here a curve, there a spire in the quest for the Siza-like poetic touch. In such cases it is much wiser to keep to the banal reality of the basic type. After all, a town is made of a mix of obvious and banal buildings and emergent architecture. Simple and unpretentious projects would probably do better service to the town scene and acquire more depth simply doing hard (and perhaps boring) work on existing typology, seeking out its expression potential.

Once accepted the notion that type is an abstraction and that the typological story and structure of a building has a life apart though parallel to its architecture, typological study can help the individual project acquire a skeleton, a conceptual structure, even a clearer linguistic structure. It can be meter, frame or paradigm for architectural language. It can be no more.

In conclusion, to renew the typological approach to architecture, I feel we

should accept the fact that type is not created or is not completely created (if it is difficult to perceive a 'kunstwollen' for buildings, a 'typ-wollen' simply does not exist), that type happens, and hence, that we should define the divarication of plan concepts, of volume and its relation to town morphology, of architectural language, that is, that we should define an exploded view of architecture capable of grasping the multiple processes of the making of architecture.

Though apparently complicating the methods of analysis and increasing the distances from the material techniques of the daily practice of architecture, this should get us nearer to the heart of the design process and gap the distance between creative work and scientific- cultural work.



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